

# DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of a 132 kV Overhead Power Line between the Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern Cape and Western Cape Provinces



## APPENDIX K: Environmental Management Programme for the On-Site Switching Station

ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

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

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**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 switching station 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 switching station 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 switching station 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 <b>not legally binding</b>	Definitions, acronyms, roles and 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 <b>is not required</b> 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</p>

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Part	Section	Heading	Content
			EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.
	2	Site specific information	<p>Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA 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 <b>legally binding</b>. 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 <b>must be</b> 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	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



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Part	Section	Heading	Content
			<p>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 <b>is required</b> to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>This section applies only <b>to additional</b> 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 <b>not required</b> 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

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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 Environmental Control Officer (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 regards to:

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

(ix) Any other information deemed necessary by the Project Manager.

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

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

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

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

“**works**” means the works to be executed in terms of the Contract.

## 2. ACRONYMS and ABBREVIATIONS

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

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

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

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

Responsible Person(s)	Role and Responsibilities
Developer’s Project Manager (DPM)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> <li>- Be fully conversant with the conditions of the EA;</li> <li>- Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s);</li> <li>- Issuing of site instructions to the Contractor for corrective actions required;</li> <li>- Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings, as well as overall management of the project and EMPr implementation; and</li> <li>- Ensure that periodic environmental performance audits are undertaken on the project implementation.</li> </ul>

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Responsible Person(s)	Role and Responsibilities
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the Contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> <li>- Ensure that all contractors identify a contractor's Environmental Officer (cEO);</li> <li>- Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO;</li> <li>- Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO;</li> <li>- Issuing of site instructions to the Contractor for corrective actions required;</li> <li>- Will issue all non-compliances to contractors; and</li> <li>- Ratify the Monthly Environmental Report.</li> </ul>
Environmental Control Officer (ECO)	<p><u>Role</u> The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &amp; Affected Parties (RI&amp;APs), as required. Issues of non-compliance</p>

Responsible Person(s)	Role and Responsibilities
	<p>raised by the ECO must be taken up by the Project Manager and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e., those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> <li>- Be aware of the findings and conclusions of all EA related to the development;</li> <li>- Be familiar with the recommendations and mitigation measures of this EMPr;</li> <li>- Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them;</li> <li>- 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;</li> <li>- Educate the construction team about the management measures contained in the EMPr and environmental licenses;</li> <li>- Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective;</li> <li>- Monitoring the performance of the contractors and ensuring compliance with the EMPr and associated Method Statements;</li> <li>- 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;</li> <li>- Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns;</li> <li>- Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr;</li> <li>- Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO);</li> </ul>



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Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> <li>- Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken;</li> <li>- Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken;</li> <li>- Assisting in the resolution of conflicts;</li> <li>- Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor;</li> <li>- 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;</li> <li>- Maintenance, update and review of the EMPr; and</li> <li>- Communication of all modifications to the EMPr to the relevant stakeholders.</li> </ul>
<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"> <li>- Be fully conversant with the EMPr;</li> <li>- Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;</li> <li>- Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ;</li> <li>- Confine the development site to the demarcated area;</li> <li>- Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO);</li> </ul>

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Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> <li>- Assist the contractors in addressing environmental challenges on site;</li> <li>- Assist in incident management:</li> <li>- Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared;</li> <li>- Assist the contractor in investigating environmental incidents and compile investigation reports;</li> <li>- Follow-up on pre-warnings, defects, non-conformance reports;</li> <li>- Measure and communicate environmental performance to the Contractor;</li> <li>- Conduct environmental awareness training on site together with ECO and cEO;</li> <li>- Ensure that the necessary legal permits and / or licenses are in place and up to date; and</li> <li>- Acting as Developer's Environmental Representative on site and work together with the ECO and contractor.</li> </ul>
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"> <li>- project delivery and quality control for the development services as per appointment;</li> <li>- 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;</li> <li>- 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;</li> </ul>

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Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> <li>- attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; and</li> <li>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.</li> </ul>
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"> <li>- Be on site throughout the duration of the project and be dedicated to the project;</li> <li>- Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site;</li> <li>- Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements;</li> <li>- Attend the Environmental Site Meeting;</li> <li>- Undertaking corrective actions where non-compliances are registered within the stipulated timeframes;</li> <li>- Report back formally on the completion of corrective actions;</li> <li>- Assist the ECO in maintaining all the site documentation;</li> <li>- Prepare the site inspection reports and corrective action reports for submission to the ECO;</li> <li>- Assist the ECO with the preparing of the monthly report; and</li> <li>- Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.</li> </ul>

#### 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 (on site and electronically):

- 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; and
- 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 regards 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, laydown or storage areas, satellite camps, infrastructure, fencing;
- Batch plants;
- Workshop or plant servicing;
- Handling transport and storage of Hazardous Chemical Substances;
- Vegetation management – Protected plants and habitats, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire preparedness 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;
- Date by which the corrective action is to be completed; and
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, there is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

#### 4.8 Corrective action records

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

#### 4.9 Photographic record

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

The Contractor shall:

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

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

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

#### 4.10 Complaints register

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

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

#### 4.11 Claims for damages

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

1. Record the full detail of the complaint as described in **section 4.10** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to



the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and

4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

#### 4.12 Interactions with affected parties

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

The ECOs shall:

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

#### 4.13 Environmental audits

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

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

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

#### 4.14 Final environmental audits

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

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

### **5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS**

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

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

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

**Note from the CSIR: Section 1 of Part B of the gazetted Generic EMPr contains a pre-approved template with aspects that are common to the development of switching station infrastructure. This section will be completed by the Contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity (as stipulated in the Introduction of this gazetted Generic EMPr, specifically Section 5). This section will not be submitted to the DFFE as it has already been pre-approved in the gazetted Generic EMPr. To allow I&APs access to the pre-approved EMPr template for consideration through the decision-making process, the template is being released with the Draft BA Report for a 30-day commenting period.**

**5.1 Environmental awareness training**

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- All staff must receive environmental awareness training prior to commencement of the activities;</li> <li>- The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course;</li> <li>- Refresher environmental awareness training is available as and when required;</li> <li>- All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr;</li> <li>- 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"> <li>a) Safety notifications; and</li> <li>b) No littering.</li> </ul> </li> <li>- Environmental awareness training must include as a minimum the following:               <ul style="list-style-type: none"> <li>a) Description of significant environmental impacts, actual or potential, related to their work activities;</li> <li>b) Mitigation measures to be implemented when</li> </ul> </li> </ul>						

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

<p><b>Impact management outcome:</b> Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.</p>		
<p><b>Impact Management Actions</b></p>	<p><b>Implementation</b></p>	<p><b>Monitoring</b></p>

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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> <li>- Sites must be located where possible on previously disturbed areas;</li> <li>- The camp must be fenced in accordance with <b>Section 5.5: Fencing and gate installation</b>; and</li> <li>- The use of existing accommodation for contractor staff, where possible, is encouraged.</li> </ul>						

**5.3 Access restricted areas**

<b>Impact management outcome:</b> Access to restricted areas prevented.		
<b>Impact Management Actions</b>	<b>Implementation</b>	<b>Monitoring</b>

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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development;</li> <li>- 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</li> <li>- Unauthorised access and development related activity inside access restricted areas is prohibited.</li> </ul>						

**5.4 Access roads**

<b>Impact management outcome:</b> 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"> <li>- An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencement of activities;</li> <li>- 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;</li> <li>- All contractors must be made aware of all these access</li> </ul>						

<p>routes.</p> <ul style="list-style-type: none"> <li>- Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;</li> <li>- Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads;</li> <li>- In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with <b>section 4.9: photographic record</b>; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor;</li> <li>- Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands; and</li> <li>- Access roads must only be developed on a pre-planned and approved roads.</li> </ul>						
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**5.5 Fencing and Gate installation**

<p><b>Impact management outcome:</b> Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.</p>							
<p><b>Impact Management Actions</b></p>	<p><b>Implementation</b></p>				<p><b>Monitoring</b></p>		
	<p>Responsible</p>	<p>Method</p>	<p>of</p>	<p>Timeframe</p>	<p>for</p>	<p>Responsible</p>	<p>Frequency</p>

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	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> <li>- Use existing gates provided to gain access to all parts of the area authorised for development, where possible;</li> <li>- Existing and new gates to be recorded and documented in accordance with <b>section 4.9: photographic record</b>;</li> <li>- All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner;</li> <li>- 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;</li> <li>- 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;</li> <li>- Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate;</li> <li>- Original tension must be maintained in the fence wires;</li> <li>- All gates installed in electrified fencing must be re-electrified;</li> <li>- All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities;</li> <li>- Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable;</li> <li>- Any temporary fencing to restrict the movement of live-stock must only be erected with the permission of the land owner;</li> <li>- All fencing must be developed of high quality material bearing the SABS mark;</li> <li>- The use of razor wire as fencing must be avoided;</li> </ul>						



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<ul style="list-style-type: none"> <li>- 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;</li> <li>- On completion of the development phase all temporary fences are to be removed; and</li> <li>- The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.</li> </ul>						
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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"> <li>- 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;</li> <li>- The Contractor must ensure the following:                             <ul style="list-style-type: none"> <li>a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river;</li> <li>b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and</li> <li>c. All reasonable measures to limit pollution or</li> </ul> </li> </ul>						

<p>sedimentation of the downstream watercourse are implemented.</p> <ul style="list-style-type: none"> <li>- Ensure water conservation is being practiced by:             <ul style="list-style-type: none"> <li>a. Minimising water use during cleaning of equipment;</li> <li>b. Undertaking regular audits of water systems;</li> <li>c. Including a discussion on water usage and conservation during environmental awareness training; and</li> <li>d. The use of grey water is encouraged.</li> </ul> </li> </ul>						
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**5.7 Storm and waste water management**

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> <li>- Natural storm water runoff not contaminated during the development and clean water can be discharged</li> </ul>						

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<p>directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <ul style="list-style-type: none"> <li>– 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.</li> </ul>						
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**5.8 Solid and hazardous waste management**

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>– All measures regarding waste management must be undertaken using an integrated waste management approach;</li> <li>– Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided;</li> <li>– A suitably positioned and clearly demarcated waste collection site must be identified and provided;</li> <li>– The waste collection site must be maintained in a clean and</li> </ul>						

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<p>orderly manner;</p> <ul style="list-style-type: none"> <li>- Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal;</li> <li>- Staff must be trained in waste segregation;</li> <li>- Bins must be emptied regularly;</li> <li>- General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company;</li> <li>- Hazardous waste must be disposed of at a registered waste disposal site; and</li> <li>- Certificates of safe disposal for general, hazardous and recycled waste must be maintained.</li> </ul>						
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**5.9 Protection of watercourses and estuaries**

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- 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;</li> <li>- In the event of a spill, prompt action must be taken to clear the polluted or affected areas;</li> </ul>						

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<ul style="list-style-type: none"> <li>- Where possible, no development equipment must traverse any seasonal or permanent wetland;</li> <li>- No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur;</li> <li>- Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to lower position is available;</li> <li>- There must not be any impact on the long term morphological dynamics of watercourses or estuaries;</li> <li>- Existing crossing points must be favored over the creation of new crossings (including temporary access);</li> <li>- When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken:             <ul style="list-style-type: none"> <li>a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse</li> <li>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;</li> <li>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</li> <li>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.</li> </ul> </li> </ul>						
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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><b>General:</b></p> <ul style="list-style-type: none"> <li>- Indigenous vegetation which does not interfere with the development must be left undisturbed;</li> <li>- Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species;</li> <li>- 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;</li> <li>- 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;</li> <li>- 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;</li> </ul>						

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<ul style="list-style-type: none"> <li>- Trees felled due to construction must be documented and form part of the Environmental Audit Report;</li> <li>- Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris;</li> <li>- 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;</li> <li>- A daily register must be kept of all relevant details of herbicide usage;</li> <li>- No herbicides must be used in estuaries; and</li> <li>- All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to <b>Section 5.3: Access restricted areas</b>. Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.</li> </ul>						
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**5.11 Protection of fauna**

<p><b>Impact management outcome:</b> Disturbance to fauna is minimised.</p>						
<p><b>Impact Management Actions</b></p>	<p><b>Implementation</b></p>			<p><b>Monitoring</b></p>		
	Responsible	Method	of Timeframe for	Responsible	Frequency	Evidence of

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	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> <li>- No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present;</li> <li>- The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme;</li> <li>- 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;</li> <li>- Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds;</li> <li>- 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;</li> <li>- No deliberate or intentional killing of fauna is allowed;</li> <li>- 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</li> <li>- 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.</li> </ul>						



**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"> <li>- Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in <b>Section 5.3: Access restricted areas</b>;</li> <li>- Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; and</li> <li>- 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.</li> </ul>						

**5.13 Safety of the public**

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- 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.;</li> <li>- All unattended open excavations must be adequately fenced or demarcated;</li> <li>- Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;</li> <li>- Ensure structures vulnerable to high winds are secured; and</li> <li>- Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.</li> </ul>						

**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"> <li>- Mobile chemical toilets are installed onsite if no other ablution facilities are available;</li> <li>- The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances;</li> <li>- Where mobile chemical toilets are required, the following must be ensured:               <ul style="list-style-type: none"> <li>a) Toilets are located no closer than 100 m to any watercourse or water body;</li> <li>b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause;</li> <li>c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr;</li> <li>d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to</li> </ul> </li> </ul>						

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; and – A copy of the waste disposal certificates must be maintained.						
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**5.15 Prevention of disease**

<b>Impact Management outcome:</b> 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"> <li>– Undertake environmentally-friendly pest control in the camp area;</li> <li>– Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV and AIDS;</li> <li>– The Contractor must ensure that information posters on AIDS are displayed in the Contractor's Camp area;</li> <li>– Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;</li> <li>– Free condoms must be made available to all staff on site at</li> </ul>						

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central points; – Medical support must be made available; and – Provide access to Voluntary HIV Testing and Counselling Services.						
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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"> <li>– Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;</li> <li>– The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;</li> <li>– All staff must be made aware of emergency procedures as part of environmental awareness training;</li> <li>– The relevant local authority must be made aware of a fire as soon as it starts;</li> <li>– In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see <b>Hazardous Substances section 5.17</b>).</li> </ul>						

**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"> <li>- The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;</li> <li>- All hazardous substances must be stored in suitable containers as defined in the Method Statement;</li> <li>- Containers must be clearly marked to indicate contents, quantities and safety requirements;</li> <li>- All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers;</li> <li>- Bunded areas to be suitably lined with a SABS approved liner;</li> <li>- An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;</li> <li>- All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);</li> <li>- All employees working with HCS must be trained in the safe</li> </ul>						

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<p>use of the substance and according to the safety data sheet;</p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers;</li> <li>- The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall);</li> <li>- The floor of the bund must be sloped, draining to an oil separator;</li> <li>- 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;</li> <li>- All empty externally dirty drums must be stored on a drip tray or within a bunded area;</li> <li>- No unauthorised access into the hazardous substances storage areas must be permitted;</li> <li>- No smoking must be allowed within the vicinity of the hazardous storage areas;</li> <li>- Adequate fire-fighting equipment must be made available at all hazardous storage areas;</li> <li>- Where refueling away from the dedicated refueling station is</li> </ul>						
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<p>required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used;</p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- The responsible operator must have the required training to make use of the spill kit in emergency situations;</li> <li>- An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken;</li> <li>- 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 <b>Section 5.7</b> for procedures concerning <b>storm and wastewater management</b> and <b>5.8</b> for <b>solid and hazardous waste management</b>.</li> </ul>						
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**5.18 Workshop, equipment maintenance and storage**

<p><b>Impact management outcome:</b> Soil, surface water and groundwater contamination is minimised.</p>						
<p><b>Impact Management Actions</b></p>	<p><b>Implementation</b></p>			<p><b>Monitoring</b></p>		
	<p>Responsible person</p>	<p>Method of implementation</p>	<p>Timeframe for implementation</p>	<p>Responsible person</p>	<p>Frequency</p>	<p>Evidence of compliance</p>



<ul style="list-style-type: none"> <li>- Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;</li> <li>- During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts;</li> <li>- Leaking equipment must be repaired immediately or be removed from site to facilitate repair;</li> <li>- Workshop areas must be monitored for oil and fuel spills;</li> <li>- Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;</li> <li>- 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;</li> <li>- Water drainage from the workshop must be contained and managed in accordance Section <b>5.7: Storm and waste water management</b>.</li> </ul>						
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**5.19 Batching plants**

<p><b>Impact management outcome:</b> Minimise spillages and contamination of soil, surface water and groundwater.</p>							
<p><b>Impact Management Actions</b></p>	<p><b>Implementation</b></p>			<p><b>Monitoring</b></p>			
	Responsible	Method	of	Timeframe	for	Responsible	Frequency

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	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> <li>- Concrete mixing must be carried out on an impermeable surface;</li> <li>- Batching plants areas must be fitted with a containment facility for the collection of cement laden water;</li> <li>- Dirty water from the batching plant must be contained to prevent soil and groundwater contamination;</li> <li>- Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;</li> <li>- A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;</li> <li>- Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility;</li> <li>- Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;</li> <li>- Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <b>Section 5.20: Dust emissions</b>);</li> <li>- 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; and</li> <li>- Temporary fencing must be erected around batching plants in accordance with Section <b>5.5: Fencing and gate installation</b>.</li> </ul>						

**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"> <li>- Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;</li> <li>- 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;</li> <li>- Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;</li> <li>- 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;</li> <li>- Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;</li> <li>- Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of</li> </ul>						

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<p>the ECO;</p> <ul style="list-style-type: none"> <li>- Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas;</li> <li>- Straw stabilisation must be applied at a rate of one bale/10 m<sup>2</sup> and harrowed into the top 100 mm of top material, for all completed earthworks; and</li> <li>- For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.</li> </ul>						
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**5.21 Blasting**

<p><b>Impact management outcome:</b> Impact to the environment is minimised through a safe blasting practice.</p>						
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"> <li>- Any blasting activity must be conducted by a suitably licensed blasting contractor; and</li> <li>- Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.</li> </ul>						

**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"> <li>- The Contractor must keep noise level within acceptable limits and restrict the use of sound amplification equipment for communication and emergency only;</li> <li>- All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;</li> <li>- Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; and</li> <li>- 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.</li> </ul>						

**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"> <li>- Designate smoking areas where the fire hazard could be regarded as insignificant;</li> <li>- Firefighting equipment must be available on all vehicles located on site;</li> <li>- The local Fire Protection Agency (FPA) must be informed of construction activities;</li> <li>- Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; and</li> <li>- Two-way swop of contact details between ECO and FPA.</li> </ul>						

**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"> <li>- 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;</li> <li>- All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;</li> <li>- Topsoil stockpiles must not exceed 2 m in height;</li> <li>- During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.);</li> <li>- Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.</li> </ul>						

**5.25 Civil works**

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone;</li> <li>- Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards;</li> <li>- Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;</li> <li>- These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;</li> <li>- Rehabilitation of the disturbed areas must be managed in accordance with <b>Section 5.35: Landscaping and rehabilitation</b>;</li> <li>- All excess spoil generated during terracing activities must be</li> </ul>						



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<p>disposed of in an appropriate manner and at a recognised landfill site; and</p> <ul style="list-style-type: none"> <li>- Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes.</li> </ul>						
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**5.26 Excavation of foundation, cable trenching and drainage systems**

<p><b>Impact management outcome:</b> No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.</p>						
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"> <li>- 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;</li> <li>- Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;</li> <li>- Management of equipment for excavation purposes must be undertaken in accordance with <b>Section 5.18: Workshop,</b></li> </ul>						

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<p><b>equipment maintenance and storage;</b> and</p> <ul style="list-style-type: none"> <li>– Hazardous substances spills from equipment must be managed in accordance with <b>Section 5.17: Hazardous substances.</b></li> </ul>						
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**5.27 Installation of foundations, cable trenching and drainage systems**

<p><b>Impact management outcome:</b> No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.</p>						
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"> <li>– Batching of cement to be undertaken in accordance with <b>Section 5.19: Batching plants;</b> and</li> <li>– Residual solid waste must be disposed of in accordance with <b>Section 5.8: Solid waste and hazardous management.</b></li> </ul>						

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

<p><b>Impact management outcome:</b> No environmental degradation occurs as a result of installation of equipment.</p>						
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"> <li>- Management of dust must be conducted in accordance with Section <b>5.20: Dust emissions</b>;</li> <li>- Management of equipment used for installation must be conducted in accordance with Section <b>5.18: Workshop, equipment maintenance and storage</b>;</li> <li>- Management hazardous substances and any associated spills must be conducted in accordance with Section <b>5.17: Hazardous substances</b>; and</li> <li>- Residual solid waste must be recycled or disposed of in accordance with <b>Section 5.8: Solid waste and hazardous management</b>.</li> </ul>						

**5.29 Steelwork Assembly and Erection**

<p><b>Impact management outcome:</b> No environmental degradation occurs as a result of steelwork assembly and erection.</p>						
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"> <li>- During assembly, care must be taken to ensure that no</li> </ul>						

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<p>wasted/unused materials are left on site e.g. bolts and nuts</p> <ul style="list-style-type: none"> <li>– Emergency repairs due to breakages of equipment must be managed in accordance with <b>Section 5.18: Workshop, equipment maintenance and storage</b> and <b>Section 5.16: Emergency procedures</b>.</li> </ul>					
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**5.30 Cabling and Stringing**

**Impact management outcome:** No environmental degradation occurs as a result of stringing.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>– Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with <b>Section 5.8: Solid waste and hazardous waste management</b>;</li> <li>– Management of equipment used for installation shall be conducted in accordance with <b>Section 5.18: Workshop, equipment maintenance and storage</b>; and</li> <li>– Management hazardous substances and any associated spills shall be conducted in accordance with <b>Section 5.17: Hazardous substances</b>.</li> </ul>						

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

**Impact management outcome:** No environmental degradation occurs as a result of Testing and Commissioning.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Residual solid waste must be recycled or disposed of in accordance with <b>Section 5.8: Solid waste and hazardous management.</b>						

**5.32 Socio-economic**

**Impact management outcome:** enhanced socio-economic development.

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

ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

<ul style="list-style-type: none"> <li>- Develop and implement communication strategies to facilitate public participation;</li> <li>- Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;</li> <li>- Sustain continuous communication and liaison with neighboring owners and residents;</li> <li>- Create work and training opportunities for local stakeholders; and</li> <li>- 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.</li> </ul>						
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**5.33 Temporary closure of site**

<p><b>Impact management outcome:</b> Minimise the risk of environmental impact during periods of site closure greater than five days.</p>						
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"> <li>- Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in <b>sections 5.17: Hazardous substances and</b></li> </ul>						

<p><b>5.18: Workshop, equipment maintenance and storage:</b></p> <ul style="list-style-type: none"> <li>- Hazardous storage areas must be well ventilated;</li> <li>- Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;</li> <li>- Emergency and contact details displayed must be displayed;</li> <li>- Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;</li> <li>- Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;</li> <li>- Fire hazards identified and the local authority must have been notified of any potential threats e.g., large brush stockpiles, fuels etc.;</li> <li>- Structures vulnerable to high winds must be secured;</li> <li>- Wind and dust mitigation must be implemented;</li> <li>- Cement and materials stores must have been secured;</li> <li>- Toilets must have been emptied and secured;</li> <li>- Refuse bins must have been emptied and secured; and</li> <li>- Drip trays must have been emptied and secured.</li> </ul>						
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**5.34 Dismantling of old equipment**

<p><b>Impact management outcome:</b> Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.</p>		
<p><b>Impact Management Actions</b></p>	<p><b>Implementation</b></p>	<p><b>Monitoring</b></p>

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

**5.35 Landscaping and rehabilitation**

<b>Impact management outcome:</b> Areas disturbed during the development phase are returned to a state that approximates the original condition.		
<b>Impact Management Actions</b>	<b>Implementation</b>	<b>Monitoring</b>



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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- 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;</li> <li>- 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</li> <li>- 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;</li> <li>- 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;</li> <li>- 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;</li> <li>- Rehabilitation of access roads outside of farmland;</li> <li>- Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;</li> <li>- Stockpiled topsoil must be used for rehabilitation (refer to <b>Section 5.24: Stockpiling and stockpiled areas</b>);</li> <li>- Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;</li> <li>- Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;</li> <li>- Subsoil must be ripped before topsoil is placed;</li> </ul>						

<ul style="list-style-type: none"> <li>- The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;</li> <li>- Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;</li> <li>- 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;</li> <li>- Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil;</li> <li>- 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"> <li>a) Annual and perennial plants are chosen;</li> <li>b) Pioneer species are included;</li> <li>c) Species chosen must be indigenous to the area with the seeds used coming from the area;</li> <li>d) Root systems must have a binding effect on the soil; and</li> <li>e) The final product must not cause an ecological imbalance in the area.</li> </ul> </li> </ul>						
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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:

Name of applicant: **Padloper PV (Pty) Ltd**

Contact person/ name of Applicant representative: **Stephnie Kot / Michelle Herbert**

Tel No: **021 670 1423**

Fax No: **N/A**

Postal Address: **PO Box 23101, Claremont, Western Cape, 7735**

Physical Address: **2<sup>nd</sup> Floor Fernwood House, The Oval, Oakdale Road, Newlands, Cape Town, 7700**

##### 7.1.2 Details and expertise of the EAP:

Name of applicant: **Company of EAP: Council for Scientific and Industrial Research (CSIR).**

Name of EAP: **Paul Lochner**

Tel No: **021 888 2400 or 084 442 3646**

Fax No: **021 888 2693**

E-mail address: **PLochner@csir.co.za and DMoodley1@csir.co.za**

Expertise of the EAP (Curriculum Vitae included): **Qualifications: B.Sc. Civil Engineering (awarded with Honours), University of Cape Town; M. Phil. Environmental Science, University of Cape Town. Professional Registration and Affiliations: Registered EAP (2019/745) with the Environmental Assessment Practitioners Association of South Africa (EAPASA). The Curriculum Vitae of Paul Lochner and Dhiveshni Moodley are included in Appendix A of this EMPr.**

7.1.3 Project name: **Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of a 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape provinces.**

##### 7.1.4 Description of the project:

**African Clean Energy Developments (Pty) Ltd (hereinafter referred to as the "Project Developer") is proposing, on behalf of Padloper PV (Pty) Ltd (hereinafter referred to as "the Project Applicant"), the development of seven solar photovoltaic (PV) facilities with a**

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capacity of between 100 and 250 MW each, seven associated 132 kV overhead power lines, and their associated infrastructure, approximately 18 km north-east of the town of Murraysburg in the Western Cape and Northern Cape provinces (Figure 1).

The proposed cluster of Solar PV facilities, overhead power lines and their associated infrastructure are collectively referred to as the ‘Padloper Solar and EGI Cluster’. One of the proposed PV facilities (i.e., Padloper PV 1) is located in the Ubuntu Local Municipality and Pixley Ka Seme District Municipality in the Northern Cape province. Two of the proposed power lines (i.e., Padloper EGI 1 and Padloper EGI 4) traverse both the specifically the Ubuntu Local Municipality and the Beaufort West Local Municipality in the Western Cape and Northern Cape provinces. The remainder of the proposed PV facilities (i.e., Padloper PV 2-7) and power lines (i.e., Padloper EGI 2, 3, and 5-7) are located entirely in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape.

Proposed Padloper Solar Photovoltaic (PV) and Electricity Grid Infrastructure (EGI) cluster near Murraysburg, in the Western Cape and Northern Cape, South Africa

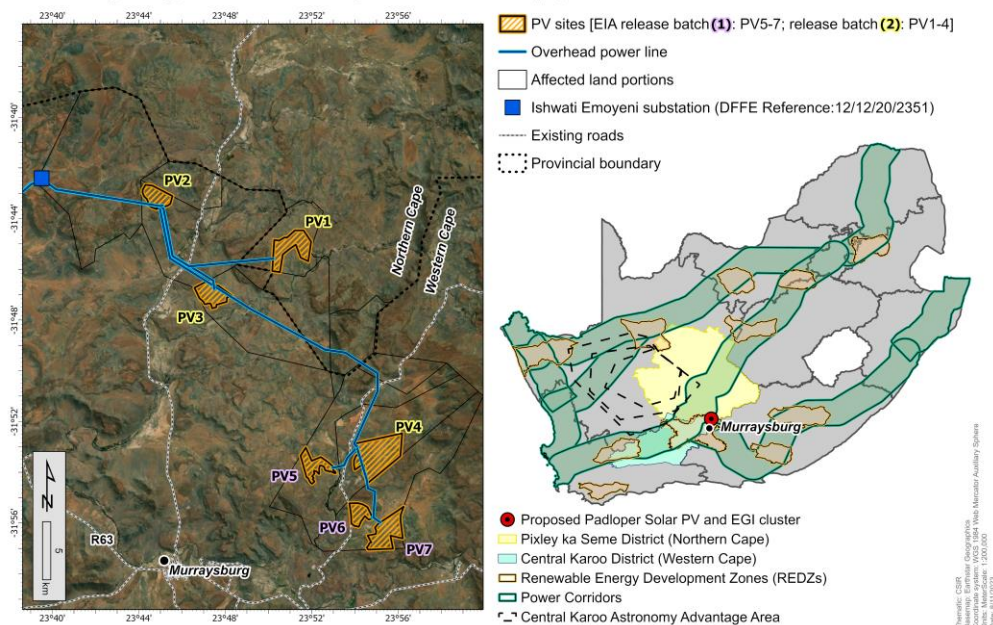


Figure 1: Locality of the proposed Padloper Solar and EGI Cluster and the phased approach of the Basic Assessment Processes.<sup>1</sup>

This EMPr focuses on the 132 kV facility switching substation complex located within the site, adjacent to the facility substation. The full extent of the affected farm property on which the proposed PV facility (and therefore facility switching station) is planned to be constructed (should EA be granted) has been assessed by the specialists to identify environmental sensitivities and “no-go” areas.

<sup>1</sup> The Basic Assessment processed for the projects comprising the proposed Padloper Solar and EGI Cluster have been split into two batches. Batch 1 comprises of Padloper PV and EGI 5-7. Batch 2 comprises of the BA Processes for Projects Padloper PV and EGI 1-4; these processes are currently being undertaken concurrently. The BA Processes for the projects comprising Batch 1 were initiated in August 2023 and are being undertaken separately.

**Table 3: Farm portion associated with the proposed Padloper switching station**

Affected Farm Portion	SG Code
Portion 7 of Farm Klipplaat No. 109	C06300000000010900007

The proposed solar PV project, and therefore the on-site switching station, is located entirely within the Renewable Energy Development Zone 11 (i.e., Beaufort West REDZ), one of the eleven REDZs formally gazetted in South Africa for the purpose of developing solar PV and wind energy generation facilities (Government Gazette 41445, Government Notice (GN) 114; 16 February 2018 and (GN) 144; 26 February 2021). In addition, the proposed power line (i.e., Padloper EGI 1) is located within the Central Strategic Transmission Corridor, one of five EGI Power Corridors were gazetted for implementation on 16 February 2018 in Government Gazette 41445, GN 113 and an additional two expanded corridors were gazetted 29 April 2021. The Gazette documented notice, given by the Minister of Environmental Affairs, of alternative procedures to be followed when applying for EA for large scale electricity transmission and distribution development activities, identified in terms of section 24(2)(a) of the NEMA in the identified Strategic Transmission Corridors (i.e., areas declared as geographical areas of strategic importance).

In line with the gazetted process for projects located within a REDZ, the proposed project is subject to a BA Process instead of a full Scoping and Environmental Impact Assessment (EIA) process and a reduced decision making period of 57 days, in terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA EIA Regulations (as amended) promulgated in Government Gazette 40772; in GN R326, R327, R325 and R324 on 7 April 2017. A BA Process in terms of Appendix 1 of the 2014 NEMA EIA Regulations (as amended) is therefore being undertaken for the proposed project. The Project Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the BA Process for this proposed project to determine the potential biophysical, social and economic impacts associated with undertaking the proposed activities. The Competent Authority for the proposed projects is the National Department of Forestry, Fisheries, and the Environment (DFFE).

This EMPr has been prepared as part of the requirements of the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) EIA Regulations (as amended) and is being submitted to the DFFE as part of the Application for EA for the proposed project. This EMPr covers the switching station for the proposed Padloper PV 1 only.

It is important to point out at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering phase (subsequent to the issuing of EA, should it be granted for the proposed project).

In this EMPr, the following spatial parameters apply to the management actions, unless where specified differently, such as access roads:

- The on-site switching station (i.e., 1.53 ha);

The proposed project can be divided into the following four main phases:

- Planning and Design Phase (Pre-construction Phase);
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and, where applicable, has been assessed in the specialist studies (included in Appendix D of this BA Report). Management and mitigation measures required to address all the impacts are included within this EMPr.

The construction phase will take place subsequent to the issuing of the EA from the DFFE (should such EA be granted) and a successful BID in terms of the Renewable Energy Independent Power Producer Programme (REIPPPP) (i.e., the issuing of a PPA).

The main activities that will form part of the construction phase are:

- Removal of vegetation for the proposed infrastructure, where necessary, within the approved development footprint to facilitate the construction and/or establishment of infrastructure.
- Site establishment of the switching station and its associated infrastructure;
- Establishment of a laydown area for equipment and/or a batching plant;
- Stockpiling of topsoil and cleared vegetation, where necessary;
- Creation of employment opportunities;
- Transportation of material and equipment to site, and personnel to and from site; and
- Construction of the switching station infrastructure and additional infrastructure.

The following activities will occur during the operational phase of the proposed project:

- The transformation of electricity from the proposed solar facility; and
- Maintenance of the infrastructure.

At the end of the operational phase, the switching station may be decommissioned, or may be repowered i.e., redesigned and refitted so as to operate for a longer period. The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise i.e., if the facility becomes outdated or the land needs to be used for other purposes, the decommissioning procedures will be undertaken in line with an approved EMPr and relevant legislation at the time, and the area will be rehabilitated and returned to its pre-construction state. All decommissioned materials will be recycled, or else be disposed of in accordance with local regulations and international best practice, where possible.

The overall goal for environmental management for the proposed project is to plan, design, construct and operate the project in a manner that:

- **Minimises the ecological footprint of the project on the local environment;**
- **Minimises impacts on fauna and flora, and sensitive habitats, such as sensitive heritage resources identified by the specialist;**
- **Facilitates harmonious co-existence between the project and other land uses in the area;**
- **Enhances the socio-economic benefits in the local area; and**
- **Contributes to the environmental baseline and understanding of environmental impacts of Electrical Grid Infrastructure (including powerlines and substations) in a South African context.**

In this EMPr, the following spatial parameters apply to the management actions, unless where specified differently, such as access roads:

- **The switching station (i.e., 1.53 ha)**

7.1.5 Project location:

The farm name and portion number, as well as the proposed coordinates of the mid-point of the proposed switching station, are provided below.

FARM NAME (if applicable)	FARM NUMBER (if applicable)	PORTION NAME	PORTION NUMBER	LATITUDE	LONGITUDE
Farm Klipplaat No. 109	109	Portion 7	7	31° 45' 35.32297013" S	23° 50' 15.48366920" E

**Note from the CSIR:** The coordinates provided above are for the mid-point of the switching station only. The mid-point of the proposed PV 1 project area is located at Latitude (Y): - 31° 44' 56.1408" S and Longitude (X): 23° 50' 59.01"E.

## 7.2 Sub-section 2: Development footprint site map

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

**Note from the CSIR:** Refer to Appendix C of this EMPr for the features, combined sensitivity and layout maps for the proposed project. The sensitivity map was prepared based on specialist feedback and existing databases, including the Screening Tool, where relevant and applicable. Importantly, the findings of the Screening Tool have been verified in the maps provided in this section. Individual sensitivity maps are included in Section C of this BA Report. Combined sensitivity maps illustrating each specialist theme, where relevant, are also included in this BA Report.

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**7.3 Sub-section 3: Declaration**

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

Signature Proponent/applicant/ holder of EA

Date:



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11/08/2023

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#### **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.

**Note from the CSIR: Part C of the gazetted Generic EMPr has been compiled and included below. It includes site specific impact management outcomes and impact management actions that are not included in the pre-approved generic EMPr. It is being submitted to the DFFE together with the BA Report. This section was prepared by the EAP, with input from relevant specialists on the project team (Table 4). This section of the EMPr is a supplement to the gazetted EMPr and provides site specific mitigation measures identified in the specialist studies contained in Appendix D of this BA Report. It was confirmed with the DFFE Interpretation Query (IQ) Unit in February 2020 (on a separate renewable energy project) that if Part C of the gazetted Generic EMPr is required, the impact management outcomes and impact management actions must be provided; whilst the columns under the headings, “Implementation” and “Monitoring” can only be completed by the relevant parties after the EA is issued (as per Part B – Section 1).**

The Team responsible for the compilation of this EMPr is tabulated below in Table 4. The details and expertise of the EAPs and project team members are provided in Appendix A of the BA Report; whilst those of the specialists are provided in Appendix D. 1 - 13. The Curriculum Vitae of the EAP and Project Manager are included in Appendix A of this EMPr.

**Paul Lochner (Registered EAP, Technical Advisor and Quality Assurance):**

Paul Lochner is an environmental assessment practitioner (EAP) at the CSIR, with more than 30 years of experience in a wide range of environmental assessment and management studies. Paul commenced work at CSIR in 1992, after completing a B.Sc. degree in Civil

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**Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work focused on wetlands and estuarine management; environmental engineering in the coastal zone; and coastal zone management plans. Since 2008, Paul has been the leader and manager of the Environmental Management Services (EMS) group within CSIR that has been at the forefront of advancing environmental assessment in South Africa. This group currently consists of approximately 10 to 20 environmental scientists, planners, and engineers, with offices in Stellenbosch, Cape Town, and Durban. Paul's particular experience is in environmental planning and assessment for renewable energy, electricity grid infrastructure, desalination, oil and gas, wetlands and coastal zone management, and industrial and port development. He has been closely involved in the research and application of Strategic Environmental Assessment (SEA) in South Africa, and also has wide experience in Environmental and Social Impact Assessment, Environmental Management Programmes (EMPrs) and Environmental Screening Studies. He has been the project leader for over 40 SEAs and EIAs over the past 28 years. He also served as project leader for a suite of SEAs commissioned by the DFFE from 2014 to 2020. Paul is a Registered EAP (#2019/745) with the Environmental Assessment Practitioners Association of South Africa (EAPASA).**

**Dhiveshni Moodley Cand. Sci. Nat. (Project Manager):**

Dhiveshni Moodley is environmental scientist at the CSIR. Dhiveshni holds a BSc, BSc Honours (cum laude) and MSc (cum laude) degrees in Environmental Science from the University of KwaZulu-Natal. She has more than three years work experience in flood risk, hydro-pedological- and wetland functional assessment specialist studies, as well as conducting BAs and S&EIAs in the Renewable Energy sector. Her key interest lies in applying GIS analyses to aid the formation of accurate, feasible solutions to complex environmental challenges. Dhiveshni is registered as a Candidate Natural Scientist (#1472997/19) with the SACNASP.

**Table 4: Details of the BA Project Team.**

Name	Organisation	Role/ Specialist Study
<b>CSIR Project Team</b>		
Paul Lochner ( <i>Registered EAP (2019/745)</i> )	CSIR	EAP and Project Leader
Dhiveshni Moodley ( <i>Cand.Sci.Nat.</i> )	CSIR	Project Manager
Helen Antonopoulos	CSIR	Project Officer
Luanita Snyman-van der Walt ( <i>Pr.Sci.Nat.</i> )	CSIR	Project Mapping
Phindile Mthembu	CSIR	Project Officer
<b>Specialists</b>		
Johann Lanz	Private	Agricultural Compliance Statement
Kerry Schwartz	SLR Consulting	Visual Impact Assessment
Jayson Orton	ASHA Consulting	Heritage Impact Assessment (Archaeology Cultural Landscape)
Elize Butler	Banzai Environmental	Paleontology Impact Assessment
Brian Colloty	Enviro-Sci	Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species

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Name	Organisation	Role/ Specialist Study
Brian Colloty	Enviro-Sci	Aquatic Biodiversity and Species Impact Assessment
Anja Albertyn	Holland & Associates Environmental Consultants	Avifauna Impact Assessment
Hugo van Zyl and James Kinghorn	Independent Economic Researchers	Socio-Economic Impact Assessment
Debbie Mitchell	Ishecon	BESS Risk Assessment (PV only)
Ntuthuko Hlanguza ( <i>Pr Tech Eng</i> )	SiVEST	Traffic Impact Assessment
Hardy Luttig, Dale Barrow and Shane Teek	GEOSS South Africa (PTY) Ltd	Geohydrology Assessment
Hardy Luttig and Shane Teek		Desktop Geotechnical Assessment
Lizande Kellerman, Dhiveshni Moodley, Helen Antonopoulos, Luanita Snyman-van der Walt and Minnelise Levendale (ex CSIR employee)	CSIR	Civil Aviation Site Sensitivity Verification
Lizande Kellerman, Dhiveshni Moodley, Helen Antonopoulos, Luanita Snyman-van der Walt and Minnelise Levendale (ex CSIR employee)	CSIR	Defence Site Sensitivity Verification

The project specific EMPr is presented below per specialist theme.

## TERRESTRIAL AND AQUATIC BIODIVERSITY

<ul style="list-style-type: none"> <li>▪ <b>Impact Management Outcomes:</b> <ul style="list-style-type: none"> <li>○ To reduce the loss of and impact on aquatic species and Species of Special Concern (SSC)</li> <li>○ To limit the disturbance of aquatic habitat and minimise potential to modify flow/hydraulics related impacts and increase the potential for erosion. To limit the damage or loss of riparian and wetlands systems and disturbance of the waterbodies. To prevent the loss of ecosystem services, and or habitats that would result in habitat fragmentation. To limit the displacement of any animals because of any disturbance or habitat loss. To control of invasive alien plants in riparian zones and wetland areas. To minimise direct impacts/damage to vegetation associated with freshwater resource features. To minimise the creation of hard surfaces, resulting in runoff, erosion and sedimentation. To ensure optimal rehabilitation of temporary disturbed areas (post-construction and post-decommissioning), with a stable, natural occurring vegetation cover, resembling as far as possible the vegetation composition, patterns and structure of the surrounding vegetation cover. To ensure that the storage and handling of chemicals and hydrocarbons on-site and that the storage and maintenance of machinery on-site does not cause pollution to the environment or harm to persons. To comply with waste management legislation. To minimise production of waste and ensure appropriate waste storage and disposal. To ensure that spills and leaks from construction vehicles / machinery when working in or near the delineated systems does not impact localised surface water quality.</li> </ul> </li> </ul>						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>▪ A preconstruction walkthrough of the site must be conducted to identify any areas that may contain any aquatic SSC so that these can be demarcated and avoided in the final design process.</li> <li>▪ Any remaining species that could not be avoided must then be relocated in a Search and Rescue programme that should be initiated prior to construction.</li> <li>▪ Ensure all permits required for fauna and flora rescue / capture / relocation etc. have been applied for from the relevant National and Provincial authorities.</li> <li>▪ Ensure that all permits, as outlined above, are in place prior to the commencement of the construction phase.</li> <li>▪ Develop Construction EMPr, Monitoring and Rehabilitation Plan (also see point below).</li> <li>▪ A pre-construction walkthrough of the site by an aquatic specialist is recommended so they can assist with the development of the Stormwater Management Plan (SWMP) and Aquatic Construction Rehabilitation and Monitoring Plan, coupled to micro-siting of the final layout.</li> <li>▪ Suitable stormwater management systems must be installed along roads and other areas</li> </ul>	To be completed post EA by relevant parties.					

ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

<ul style="list-style-type: none"> <li>▪ <b>Impact Management Outcomes:</b> <ul style="list-style-type: none"> <li>○ <b>To reduce the loss of and impact on aquatic species and Species of Special Concern (SSC)</b></li> <li>○ <b>To limit the disturbance of aquatic habitat and minimise potential to modify flow/hydraulics related impacts and increase the potential for erosion. To limit the damage or loss of riparian and wetlands systems and disturbance of the waterbodies. To prevent the loss of ecosystem services, and or habitats that would result in habitat fragmentation. To limit the displacement of any animals because of any disturbance or habitat loss. To control of invasive alien plants in riparian zones and wetland areas. To minimise direct impacts/damage to vegetation associated with freshwater resource features. To minimise the creation of hard surfaces, resulting in runoff, erosion and sedimentation. To ensure optimal rehabilitation of temporary disturbed areas (post-construction and post-decommissioning), with a stable, natural occurring vegetation cover, resembling as far as possible the vegetation composition, patterns and structure of the surrounding vegetation cover. To ensure that the storage and handling of chemicals and hydrocarbons on-site and that the storage and maintenance of machinery on-site does not cause pollution to the environment or harm to persons. To comply with waste management legislation. To minimise production of waste and ensure appropriate waste storage and disposal. To ensure that spills and leaks from construction vehicles / machinery when working in or near the delineated systems does not impact localised surface water quality.</b></li> </ul> </li> </ul>						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc.).</p> <ul style="list-style-type: none"> <li>▪ Ensure that the design phase incorporates the following into the Site Plan and infrastructure design: <ul style="list-style-type: none"> <li>○ All liquid chemicals including fuels and oil must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill.</li> <li>○ Washing and cleaning of equipment must be done in designated wash bays.</li> <li>○ Mechanical plant and bowsers must not be refuelled or serviced within 100m of a water course, such as rivers channels/beds (even if the watercourse is dry).</li> <li>○ All construction camps, laydown areas, wash bays, batching plants or areas and any stores should be more than 50m from any demarcated water courses.</li> </ul> </li> <li>▪ Littering and contamination associated with construction activity must be avoided through effective construction camp management.</li> </ul>						
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Any remaining species that could not be avoided must then be relocated in a Search and Rescue programme that should be initiated prior to construction (Note this has not been included to reduce the impact rating.</li> </ul>	To be completed post EA by relevant parties.					

ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

<p>▪ <b>Impact Management Outcomes:</b></p> <ul style="list-style-type: none"> <li>○ <b>To reduce the loss of and impact on aquatic species and Species of Special Concern (SSC)</b></li> <li>○ <b>To limit the disturbance of aquatic habitat and minimise potential to modify flow/hydraulics related impacts and increase the potential for erosion. To limit the damage or loss of riparian and wetlands systems and disturbance of the waterbodies. To prevent the loss of ecosystem services, and or habitats that would result in habitat fragmentation. To limit the displacement of any animals because of any disturbance or habitat loss. To control of invasive alien plants in riparian zones and wetland areas. To minimise direct impacts/damage to vegetation associated with freshwater resource features. To minimise the creation of hard surfaces, resulting in runoff, erosion and sedimentation. To ensure optimal rehabilitation of temporary disturbed areas (post-construction and post-decommissioning), with a stable, natural occurring vegetation cover, resembling as far as possible the vegetation composition, patterns and structure of the surrounding vegetation cover. To ensure that the storage and handling of chemicals and hydrocarbons on-site and that the storage and maintenance of machinery on-site does not cause pollution to the environment or harm to persons. To comply with waste management legislation. To minimise production of waste and ensure appropriate waste storage and disposal. To ensure that spills and leaks from construction vehicles / machinery when working in or near the delineated systems does not impact localised surface water quality.</b></li> </ul>						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ A pre-construction walkthrough of the site by an aquatic specialist is recommended so they can assist with the development of the Stormwater Management Plan (SWMP) and Aquatic Construction Rehabilitation and Monitoring Plan, coupled to micro-siting of the final layout.</li> <li>▪ Where large cut and fill areas are required for roads, these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation.</li> <li>▪ All alien plant re-growth, following clearance of vegetation for construction activities, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprint during the construction phase.</li> <li>▪ A pre-construction walkthrough of the site by a terrestrial specialist is recommended and they can assist with the development of the Construction Rehabilitation and Monitoring Plan, coupled to micro-siting of the final layout.</li> <li>▪ Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions may be necessary (i.e., extension, energy dissipaters, spreaders, etc).</li> <li>▪ Furthermore, the following applies to watercourse crossing upgrades associated with the proposed development: <ul style="list-style-type: none"> <li>- All pipe culverts must be removed and replaced with suitable sized box culverts, where road levels are raised.</li> <li>- River levels, regardless of the current state of the river / water course will be</li> </ul> </li> </ul>						

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<ul style="list-style-type: none"> <li>▪ <b>Impact Management Outcomes:</b> <ul style="list-style-type: none"> <li>○ <b>To reduce the loss of and impact on aquatic species and Species of Special Concern (SSC)</b></li> <li>○ <b>To limit the disturbance of aquatic habitat and minimise potential to modify flow/hydraulics related impacts and increase the potential for erosion. To limit the damage or loss of riparian and wetlands systems and disturbance of the waterbodies. To prevent the loss of ecosystem services, and or habitats that would result in habitat fragmentation. To limit the displacement of any animals because of any disturbance or habitat loss. To control of invasive alien plants in riparian zones and wetland areas. To minimise direct impacts/damage to vegetation associated with freshwater resource features. To minimise the creation of hard surfaces, resulting in runoff, erosion and sedimentation. To ensure optimal rehabilitation of temporary disturbed areas (post-construction and post-decommissioning), with a stable, natural occurring vegetation cover, resembling as far as possible the vegetation composition, patterns and structure of the surrounding vegetation cover. To ensure that the storage and handling of chemicals and hydrocarbons on-site and that the storage and maintenance of machinery on-site does not cause pollution to the environment or harm to persons. To comply with waste management legislation. To minimise production of waste and ensure appropriate waste storage and disposal. To ensure that spills and leaks from construction vehicles / machinery when working in or near the delineated systems does not impact localised surface water quality.</b></li> </ul> </li> </ul>						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown.</p> <ul style="list-style-type: none"> <li>- Where large cut and fill areas are required, these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation.</li> <li>▪ Sensitive habitats and areas outside of the project development area should be clearly demarcated as no go areas during the construction phase to avoid accidental impacts.</li> <li>▪ Develop and implement a Construction Rehabilitation and Monitoring Plan post Environmental Authorisation. This must be developed following the finalisation project layout and a walkthrough of the site has been completed. This Plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site.</li> <li>▪ Where possible, temporary construction laydown or assembly areas should be sited on transformed areas.</li> <li>▪ All construction camps, laydown areas, wash bays, batching plants or areas and any stores should be more than 50m from any demarcated water courses.</li> <li>▪ Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.</li> <li>▪ Clear demarcation during the construction phase of all undisturbed sensitive areas that are</li> </ul>						



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- **Impact Management Outcomes:**
  - **To reduce the loss of and impact on aquatic species and Species of Special Concern (SSC)**
  - **To limit the disturbance of aquatic habitat and minimise potential to modify flow/hydraulics related impacts and increase the potential for erosion. To limit the damage or loss of riparian and wetlands systems and disturbance of the waterbodies. To prevent the loss of ecosystem services, and or habitats that would result in habitat fragmentation. To limit the displacement of any animals because of any disturbance or habitat loss. To control of invasive alien plants in riparian zones and wetland areas. To minimise direct impacts/damage to vegetation associated with freshwater resource features. To minimise the creation of hard surfaces, resulting in runoff, erosion and sedimentation. To ensure optimal rehabilitation of temporary disturbed areas (post-construction and post-decommissioning), with a stable, natural occurring vegetation cover, resembling as far as possible the vegetation composition, patterns and structure of the surrounding vegetation cover. To ensure that the storage and handling of chemicals and hydrocarbons on-site and that the storage and maintenance of machinery on-site does not cause pollution to the environment or harm to persons. To comply with waste management legislation. To minimise production of waste and ensure appropriate waste storage and disposal. To ensure that spills and leaks from construction vehicles / machinery when working in or near the delineated systems does not impact localised surface water quality.**

Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>not within the direct footprints of the proposed infrastructure to ensure that there is no uncontrolled access by construction vehicles and labourers.</p> <ul style="list-style-type: none"> <li>▪ Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them.</li> <li>▪ All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr. Mitigating the risk of poaching by preventing individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.</li> <li>▪ All liquid chemicals including fuels and oil must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable Personal Protective Equipment (PPE) and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely.</li> <li>▪ Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained. in evaporation/sedimentation ponds (to capture oils, grease cement and sediment).</li> <li>▪ Mechanical plant and bowsers must not be refueled or serviced within 100m of a river channel.</li> <li>▪ Littering and contamination associated with construction activity must be avoided through effective construction camp management.</li> </ul>						

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<ul style="list-style-type: none"> <li>▪ <b>Impact Management Outcomes:</b> <ul style="list-style-type: none"> <li>○ <b>To reduce the loss of and impact on aquatic species and Species of Special Concern (SSC)</b></li> <li>○ <b>To limit the disturbance of aquatic habitat and minimise potential to modify flow/hydraulics related impacts and increase the potential for erosion. To limit the damage or loss of riparian and wetlands systems and disturbance of the waterbodies. To prevent the loss of ecosystem services, and or habitats that would result in habitat fragmentation. To limit the displacement of any animals because of any disturbance or habitat loss. To control of invasive alien plants in riparian zones and wetland areas. To minimise direct impacts/damage to vegetation associated with freshwater resource features. To minimise the creation of hard surfaces, resulting in runoff, erosion and sedimentation. To ensure optimal rehabilitation of temporary disturbed areas (post-construction and post-decommissioning), with a stable, natural occurring vegetation cover, resembling as far as possible the vegetation composition, patterns and structure of the surrounding vegetation cover. To ensure that the storage and handling of chemicals and hydrocarbons on-site and that the storage and maintenance of machinery on-site does not cause pollution to the environment or harm to persons. To comply with waste management legislation. To minimise production of waste and ensure appropriate waste storage and disposal. To ensure that spills and leaks from construction vehicles / machinery when working in or near the delineated systems does not impact localised surface water quality.</b></li> </ul> </li> </ul>						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ No stockpiling should take place within or near a water course.</li> <li>▪ All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ A SWMP must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. Effective stormwater management must include effective stabilization (gabions and Reno mattresses) of exposed soil.</li> <li>▪ Monitoring should occur on a monthly basis for 6 months post construction and where any unstable soils occur, these must be protected with temporary stabilization dependent on the scale of the impact i.e., sandbags - hay bales) until areas become revegetated. If any areas require permanent erosion protection (e.g., gabions or stone pitching) then this must be included in the WUL or GA application.</li> <li>▪ All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr.</li> <li>▪ Mitigate the risk of poaching by preventing individuals from wandering in the veld after hours; banning the possession of dogs on site by maintenance and security staff.</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Develop and implement a Decommissioning Rehabilitation and Monitoring Plan.</li> <li>▪ Implementation of the SWMP and Aquatic Rehabilitation and Monitoring Plan.</li> <li>▪ Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas.</li> <li>▪ Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.</li> <li>▪ Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc).</li> <li>▪ All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr.</li> <li>▪ The following applies to watercourse crossing upgrades: <ul style="list-style-type: none"> <li>○ All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the decommissioned crossings.</li> </ul> </li> </ul>			To be completed post EA by relevant parties.			

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>○ All liquid chemicals including fuels and oil, including for the BESS, must be stored in secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely.</li> <li>○ Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment).</li> <li>○ Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel (even if water course is dry).</li> <li>○ All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.</li> <li>○ Littering and contamination associated with construction activity must be avoided through effective construction camp management.</li> <li>○ No stockpiling should take place within or near a water course.</li> <li>○ All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable.</li> </ul>						

## AVIFAUNA

Impact Management Outcome: Prevent unnecessary displacement of priority avifauna by ensuring that contractors are aware of the requirements of the Construction Environmental Management Programme (CEMP <sub>r</sub> ) and that the rehabilitation of transformed areas is implemented by an appropriately qualified rehabilitation specialist, according to the recommendations of the botanical specialist study. Prevention of electrocution and collision mortality on the substation. Limit habitat loss.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>▪ A pre-construction avifaunal walk down should be conducted to confirm final layout and identify any sensitivities that may arise between the conclusion of the BA process and the construction phase.                             <ul style="list-style-type: none"> <li>○ Avifaunal specialist to undertake an avifaunal walkthrough of the development footprint to identify any breeding sites. Identified breeding sites must be clearly indicated on a map of the site and all staff must be made aware of these areas. Any additional mitigation measures recommended by the avifaunal specialist are implemented.</li> <li>○ Once-off within 6 weeks prior to commencement of Construction phase.</li> </ul> </li> <li>▪ Single-fence design to avoid avian species getting trapped between double-fencing.</li> <li>▪ Insulation of all electrical infrastructure, and use of bird friendly designs as per Eskom Technical Standards.</li> <li>▪ Avifaunal specialist to train ECO, cEO / dEO and Operations &amp; Maintenance (O&amp;M) team in the identification of SCC potentially occurring on site.                             <ul style="list-style-type: none"> <li>○ Avifaunal specialist to undertake 1 hour training session with ECO and cEO / dEO on site prior to construction activities, and with O&amp;M team prior to operational commencement.</li> </ul> </li> <li>▪ A bird fatality threshold and adaptive management policy must be designed by an ornithologist for the site prior to the Commercial Operation Date (COD). This policy should form an annexure of the operational EMP for the facility. This policy should identify most importantly the number of bird fatalities of priority species which will trigger a management</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Outcome: Prevent unnecessary displacement of priority avifauna by ensuring that contractors are aware of the requirements of the Construction Environmental Management Programme (CEMP <sub>r</sub> ) and that the rehabilitation of transformed areas is implemented by an appropriately qualified rehabilitation specialist, according to the recommendations of the botanical specialist study. Prevention of electrocution and collision mortality on the substation. Limit habitat loss.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>response, appropriate responses, and timelines for such responses. Fatalities of priority bird species are usually rare events (but with very high consequence) and it is difficult to analyse trends or statistics related to these fatalities as they occur. It is therefore important to have a threshold policy in place proactively to assist adaptive management.</p> <ul style="list-style-type: none"> <li>▪ No internal medium voltage power lines should be overhead. All low and medium voltage cables should be buried along road verges. Only the 132kV collector lines and grid connection power line should be above ground.</li> <li>▪ Minimise outdoor lighting needed to operate the facility to the maximum extent practicable.</li> <li>▪ Minimise perching opportunities within the facility by installing anti-perching devices, netting or other deterrents wherever possible. Examples include capping the tubular ends of panel frames or the use of camera boxes, which are designed to deter nesting.</li> <li>▪ All electrical infrastructure is to be of bird-friendly insulated design in line with the latest Eskom Technical Standards.</li> <li>▪ All fencing must be of a single-fence design to avoid avian species getting trapped between double-fencing.</li> <li>▪ All water reservoirs and open water must be covered with netting or mesh to avoid birds drowning.</li> </ul>						
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Demarcate disturbance footprint during construction, to the minimum practically possible to minimise disturbance and habitat loss. All areas outside of disturbance footprint are No Go areas. <ul style="list-style-type: none"> <li>○ Demarcate clearance footprint with construction tape or other appropriate effective means.</li> </ul> </li> <li>▪ Keep vegetation clearing within the development footprint to the minimum practically possible to minimise habitat loss. Indigenous vegetation which does not interfere with the development must be left undisturbed.</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Outcome: Prevent unnecessary displacement of priority avifauna by ensuring that contractors are aware of the requirements of the Construction Environmental Management Programme (CEMP) and that the rehabilitation of transformed areas is implemented by an appropriately qualified rehabilitation specialist, according to the recommendations of the botanical specialist study. Prevention of electrocution and collision mortality on the substation. Limit habitat loss.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ The sensitive areas identified by this study should be adhered to.</li> <li>▪ Breeding sites of any avian species as identified by an avifaunal specialist within the disturbance footprint must be kept intact and disturbance to breeding birds must be avoided.</li> <li>▪ Should SCC be found breeding within the disturbance footprint prior to or during construction or decommissioning all works within 1 km of the breeding site must be halted and an avifaunal specialist must be contacted for further instruction.</li> <li>▪ Any resulting recommendation by the avifaunal specialist to protect the breeding SCC must be implemented.</li> <li>▪ Breeding sites of SCC are to be clearly demarcated with construction tape as per the instruction of the avifaunal specialist.</li> <li>▪ Should any SCC be found breeding within the site boundary at any point during operation of the facility, the area must be cordoned off as far as practically possible, and an avifaunal specialist must be contacted within 7 days for further instruction.</li> <li>▪ All fencing must be of a single-fence design to avoid avian species getting trapped between double-fencing.</li> <li>▪ Insulation of all electrical infrastructure, and use of bird friendly designs as per Eskom Technical Standards.</li> <li>▪ All human activities associated with construction, operation and decommissioning should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment.</li> <li>▪ Use should be made of existing roads as far as possible.</li> <li>▪ All staff, vehicle and machinery activities should be strictly controlled at all times so as to ensure that the absolute minimum surface area is impacted.</li> <li>▪ Care should be taken not to introduce or propagate alien plant species/weeds during construction.</li> </ul>						

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ It is strongly recommended that rodenticides not be used at the newly established Operation and Maintenance (O&amp;M) buildings or around auxiliary infrastructure on the project site. While pest control of this nature may be effective, even so-called “environmentally friendly” rodenticides are toxic and pose significant secondary poisoning risk to predatory avifauna, especially owls.</li> <li>▪ Any overhead conductors or earth wires should be fitted with an Eskom approved anti-bird collision line-marking device to make cables more visible to birds in flight and reduce the likelihood of collisions. If more effective devices become available in future (and collision fatalities have been recorded) the new devices should be fitted as soon as possible in order to maximise the effectiveness of mitigation.</li> <li>▪ Should more than one power line be constructed in parallel with another either new or pre-existing power line, the pylon structures should be staggered as per Pallett <i>et al.</i> (2022) to increase visibility to large, slow-moving species, especially bustards and cranes.</li> <li>▪ Any underground cabling should follow roads (either existing or proposed) at all times to reduce the impact on the habitat by grouping these linear infrastructures.</li> <li>▪ No internal medium voltage power lines should be overhead. All such cables should be buried along road verges. Only the 132kV collector lines and grid connection power line should be above ground.</li> <li>▪ Minimise outdoor lighting needed to operate the facility to the maximum extent practicable.</li> <li>▪ Minimise perching and/or nesting opportunities within the facility through design and by installing anti-perching devices, netting or other deterrents wherever possible.</li> <li>▪ All electrical infrastructure is to be of bird-friendly insulated design in line with the latest Eskom Technical Standards.</li> <li>▪ Bury all low and medium voltage powerlines.</li> <li>▪ All fencing must be of a single-fence design to avoid avian species getting trapped between double-fencing.</li> <li>▪ All water reservoirs and open water must be covered with netting or mesh to avoid birds</li> </ul>						



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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>drowning.</p> <ul style="list-style-type: none"> <li>No chemicals detrimental to the health of animal species are to be used for the cleaning of the PV panels.</li> <li>A Post-construction monitoring plan is developed by an avifaunal specialist in line with Best Practice Guidelines applicable at the time of commencement of the operational phase.</li> <li>Post-construction monitoring, according to this plan must commence as soon as the facility becomes operational.</li> <li>Any additional mitigation measures recommended in the post-construction monitoring reports by the avifaunal specialist must be implemented.</li> <li>All SCC fatalities must be photographed, recorded and identified (with the assistance of an avifaunal specialist if required) and reported to Birdlife SA <a href="mailto:energy@birdlife.co.za">energy@birdlife.co.za</a>.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>A Post-construction monitoring plan is developed by an avifaunal specialist in line with Best Practice Guidelines applicable at the time of commencement of the operational phase.</li> <li>Post-construction monitoring, according to this plan must commence as soon as the facility becomes operational.</li> <li>Any additional mitigation measures recommended in the post-construction monitoring reports by the avifaunal specialist must be implemented.</li> <li>All SCC fatalities must be photographed, recorded and identified (with the assistance of an avifaunal specialist if required) and reported to Birdlife SA <a href="mailto:energy@birdlife.co.za">energy@birdlife.co.za</a>.</li> <li>The sensitive areas identified by the avifaunal study should be adhered to.</li> <li>All human activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment.</li> </ul>	To be completed post EA by relevant parties.					

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	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ Use should be made of existing roads as far as possible.</li> <li>▪ All staff, vehicle and machinery activities should be strictly controlled at all times so as to ensure that the absolute minimum of surface area is impacted.</li> <li>▪ It is strongly recommended that rodenticides not be used at the newly established Operation and Maintenance (O&amp;M) buildings or around auxiliary infrastructure on the project site. While pest control of this nature may be effective, even so-called “environmentally friendly” rodenticides are toxic and pose significant secondary poisoning risk to predatory avifauna, especially owls.</li> <li>▪ Any overhead conductors or earth wires should be fitted with an Eskom approved anti-bird collision line-marking device to make cables more visible to birds in flight and reduce the likelihood of collisions. If more effective devices become available in future (and collision fatalities have been recorded) the new devices should be fitted as soon as possible in order to maximise the effectiveness of mitigation.</li> <li>▪ Any residual impacts recorded by operational phase monitoring must be mitigated with additional mitigation measures as required.</li> <li>▪ Minimise outdoor lighting needed to operate the facility to the maximum extent practicable.</li> <li>▪ Minimise perching opportunities within the facility by installing anti-perching devices, netting or other deterrents wherever possible.</li> <li>▪ All electrical infrastructure is to be of bird-friendly insulated design in line with the latest Eskom Technical Standards.</li> <li>▪ Bury all low and medium voltage powerlines.</li> <li>▪ All fencing must be of a single-fence design to avoid avian species getting trapped between double-fencing.</li> <li>▪ All water reservoirs and open water must be covered with netting or mesh to avoid birds drowning.</li> <li>▪ No chemicals detrimental to the health of animal species are to be used for the cleaning of</li> </ul>						

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
the project infrastructure.						
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ A pre-decommissioning avifaunal walkthrough should be conducted to identify any sensitivities that may arise between the conclusion of the BA process and the decommissioning phase.               <ul style="list-style-type: none"> <li>○ Avifaunal specialist to undertake an avifaunal walkthrough of the development footprint to identify any breeding sites. Identified breeding sites must be clearly indicated on a map of the site and all staff must be made aware of these areas. Any additional mitigation measures recommended by the avifaunal specialist are implemented.</li> <li>○ Once-off within 6 weeks prior to commencement of Decommissioning phase.</li> </ul> </li> <li>▪ The sensitive areas identified by this study should be adhered to. During design cycle prior to decommissioning.</li> <li>▪ All human activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment.</li> <li>▪ Use should be made of existing roads as far as possible.</li> <li>▪ All staff, vehicle and machinery activities should be strictly controlled at all times so as to ensure that the absolute minimum of surface area is impacted.</li> <li>▪ Care should be taken not to introduce or propagate alien plant species/weeds during decommissioning.</li> <li>▪ Should SCC be found breeding within the disturbance footprint prior to or during decommissioning all works within 1 km of the breeding site must be halted and an avifaunal specialist must be contacted for further instruction.</li> <li>▪ Any resulting recommendation by the avifaunal specialist to protect the breeding SCC must</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>be implemented.</p> <ul style="list-style-type: none"> <li>▪ Breeding sites of SCC are to be clearly demarcated with construction tape as per the instruction of the avifaunal specialist.</li> <li>▪ Should any SCC be found breeding within the site boundary at any point during decommissioning of the facility, the area must be cordoned off as far as practically possible, and an avifaunal specialist must be contacted within 7 days for further instruction.</li> </ul>						

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## VISUAL IMPACTS

Impact Management Outcomes: To avoid or minimise construction impacts on existing visual resources and potentially sensitive receptor locations in the proposed infrastructure development. To minimise the potential visual alteration of the visual character and sense of place resulting from construction activities. To minimise the potential visual impact on the night time visual environment. Well maintained and neat complex.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Plan to minimise the construction period and avoid construction delays. Planning should also strive to:</li> <li>▪ Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.</li> <li>▪ Inform any receptors within 500 m of the site of the construction programme and schedules prior to construction. Ensure that the stakeholder is continually informed of changes to the schedule.</li> <li>▪ Make use of existing access roads where possible.</li> <li>▪ Limit the number of vehicles and trucks travelling to and from the site, as well as the number gaining access to the site (both during construction and operations), where possible.</li> <li>▪ Ensure that suitable dust suppression techniques are implemented on all access roads.</li> <li>▪ Maintain a neat construction site by removing litter, rubble and waste materials regularly.</li> <li>▪ Restrict vegetation clearance on the site to that which is required for the correct operation of the facility.</li> <li>▪ Ensure that suitable dust suppression techniques are implemented on all access roads.</li> </ul>	<p>To be completed post EA by relevant parties.</p>					
<b>CONSTRUCTION PHASE</b>						

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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>	
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>▪ Carefully plan to minimise the construction period and avoid construction delays. Re-planning should be continuous during the phase to avoid delays.</li> <li>▪ Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.</li> <li>▪ Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible.</li> <li>▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.</li> <li>▪ Vegetation clearing should take place in a phased manner. This would aim to minimize bare areas and maximise rehabilitation success of areas requiring rehabilitation.</li> <li>▪ Inform any receptors within 500 m of the site of the construction programme and schedules. Ensure that the stakeholder is continually informed of changes to the schedule.</li> <li>▪ Make use of existing access roads where possible.</li> <li>▪ Ensure that suitable dust suppression techniques are implemented: <ul style="list-style-type: none"> <li>○ on all access roads;</li> <li>○ in all areas where vegetation clearing has taken place; and</li> <li>○ on all soil stockpiles.</li> </ul> </li> <li>▪ Maintain a neat construction site by removing litter, rubble and waste materials regularly.</li> <li>▪ Restrict vegetation clearance on the site to that which is required for the correct operation of the switching station.</li> <li>▪ As far as possible, limit the number of vehicles which are allowed to access to the site.</li> <li>▪ As far as possible, limit the amount of security and operational lighting present on site.</li> <li>▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill.</li> </ul>	To be completed post EA by relevant parties.				

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ Lighting fixtures should make use of minimum lumen or wattage.</li> <li>▪ Mounting heights of lighting fixtures should be limited, or alternatively, foot-light or bollard level lights should be used.</li> <li>▪ If economically and technically feasible, make use of motion detectors on security lighting.</li> <li>▪ Infrastructure should be painted with natural tones that fit with the surrounding environment.</li> <li>▪ Non-reflective surfaces should be utilised where possible.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Restrict vegetation clearance on the site to that which is required for the correct operation of the switching station.</li> <li>▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the site.</li> <li>▪ Ensure that suitable dust suppression techniques are implemented on all gravel access roads.</li> <li>▪ As far as possible, limit the amount of security and operational lighting present on site.</li> <li>▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill.</li> <li>▪ Lighting fixtures should make use of minimum lumen or wattage.</li> <li>▪ Mounting heights of lighting fixtures should be limited, or alternatively, foot-light or bollard level lights should be used.</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ If economically and technically feasible, make use of motion detectors on security lighting.</li> <li>▪ Non-reflective surfaces should be utilised where possible.</li> </ul>						
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ All infrastructure that is not required for post-decommissioning use should be removed.</li> <li>▪ Carefully plan to minimize the decommissioning period and avoid delays.</li> <li>▪ Position storage/stockpile areas in unobtrusive positions in the landscape, where possible.</li> <li>▪ Maintain a neat decommissioning site by removing rubble and waste materials regularly.</li> <li>▪ Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase.</li> <li>▪ All cleared areas should be rehabilitated as soon as possible.</li> </ul>	To be completed post EA by relevant parties.					

### HERITAGE IMPACTS (ARCHAEOLOGY AND CULTURAL LANDSCAPE)

Impact Management Outcomes: Achieve a layout that avoids or minimises the potential impacts to archaeological resources and/or graves. Minimise damage to graves discovered accidentally. Reduce the degree of visual contrast in the landscape. Minimise landscape scarring. To rescue information, artefacts or burials before extensive damage occurs.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						



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Impact Management Outcomes: Achieve a layout that avoids or minimises the potential impacts to archaeological resources and/or graves. Minimise damage to graves discovered accidentally. Reduce the degree of visual contrast in the landscape. Minimise landscape scarring. To rescue information, artefacts or burials before extensive damage occurs.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ Regular monitoring of the development footprint by the ECO to implement the Chance Find Procedure for heritage and palaeontology resources in case heritage resources are uncovered during construction.</li> <li>▪ The final layout should be subjected to a heritage walkdown / pre-construction survey by an appointed archaeologist prior to construction.</li> <li>▪ Ensure that infrastructure is microsited prior to construction.</li> <li>▪ Signage to be modest and no higher than normal road signage.</li> </ul>	To be completed post EA by relevant parties.					
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Reporting chance finds of graves and dense clusters of artefacts as early as possible to an archaeologist and South African Heritage Resources Agency (SAHRA) (<a href="https://www.sahra.org.za/contact/">https://www.sahra.org.za/contact/</a>), protect in situ and stop work in immediate area and appoint archaeologist to exhume or sample as needed (where relevant). Such heritage finds are the property of the state and may require excavation and curation in an approved institution.</li> <li>▪ The stone-walled kraal at waypoint 208 must be flagged as a no-go area and any road widening that occurs must not impact on the walling (enough space must be allowed for large loads to easily pass by without hitting the wall).</li> <li>▪ No stones may be removed from any archaeological sites (with the exception of waypoint 213 if it cannot be preserved).</li> <li>▪ Conduct pre-construction archaeological survey focusing on areas not yet surveyed.</li> <li>▪ Minimise duration of construction period.</li> <li>▪ Minimise cut-and-fill and landscape scarring in general.</li> <li>▪ Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.</li> <li>▪ Signage to be modest and no higher than normal road signage.</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Outcomes: Achieve a layout that avoids or minimises the potential impacts to archaeological resources and/or graves. Minimise damage to graves discovered accidentally. Reduce the degree of visual contrast in the landscape. Minimise landscape scarring. To rescue information, artefacts or burials before extensive damage occurs.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>Lighting mitigation must be employed to ensure that light is directed only to where it is needed and, preferably, that it only switches on when needed.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>Ensure that all maintenance vehicles stay within designated areas.</li> <li>Ensure that visual recommendations with regards to lighting are followed.</li> <li>Make use of an early warning system that can switch on navigation lights only when they are needed (if such a system is available and approved at the time of construction).</li> <li>Paint infrastructure in earthy colours (where technically feasible) to reduce contrast.</li> <li>Lighting mitigation must be employed to ensure that light is directed only to where it is needed and, preferably, that it only switches on when needed.</li> <li>Make use of motion detectors and downlighting to reduce night-time light pollution.</li> <li>Signage to be modest and no higher than normal road signage.</li> </ul>						
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>Minimise duration of decommissioning period.</li> <li>Ensure effective rehabilitation of all areas disturbed by decommissioning activities.</li> <li>Minimise cut-and-fill and landscape scarring in general.</li> <li>Signage to be modest and no higher than normal road signage.</li> </ul>	To be completed post EA by relevant parties.					

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## HERITAGE IMPACTS (PALAEOLOGY)

Impact Management Outcomes: To notice and rescue fossil material that may be exposed in the excavations during the construction of the proposed project. Reduce or avoid direct destruction of fossil resources as a result of all bulk earthworks, viz. substation foundation excavations.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>PRE-CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>The ECO for this project must be informed that the Balfour Formation (Adelaide Subgroup, Beaufort Group, Karoo Supergroup) has a Very High Palaeontological Sensitivity, and receive any required training in this regard.</li> <li>Inform staff of the need to monitor and watch for potential fossil occurrences.</li> <li>Inform staff of the Chance Fossil Finds Protocols to be followed in the event of fossil occurrences (please refer to Appendix D of this EMPr).</li> </ul>	To be completed post EA by relevant parties.					
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>The ECO for this project must be informed that the Balfour Formation (Adelaide Subgroup, Beaufort Group, Karoo Supergroup) has a Very High Palaeontological Sensitivity.</li> <li>The ECO/designated responsible person for this project, must constantly monitor Balfour Formation area during surface clearance and construction.</li> <li>If any fossiliferous deposits are exposed by surface clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol outlined in Appendix D of this EMPr must be fully implemented. The ECO must familiarise themselves with the Chance Fossils Finds Protocol and ensure that it is kept on file on site.</li> <li>Significant fossil finds should be safeguarded and reported as soon as possible to the South African Heritage Resources Agency (SAHRA) (Contact details: 111 Harrington Street, Cape Town, 8001. PO Box 4637, Cape Town, 8000. Tel: 021 462 4502. Fax: 021 462 4509. Email: <a href="mailto:info@sahra.org.za">info@sahra.org.za</a>) and Heritage Western Cape (HWC) (Contact details: 3rd floor Protea Assurance Building, 142 Longmarket St, Cape Town City Centre, Cape Town, 8000; Private Bag X9067, Cape Town, 8000 Tel: +27 (0)21 483 9598. Fax: +27 (0) 21 483 9845. Web: <a href="http://www.hwc.org.za">www.hwc.org.za</a>) so that mitigation (recording and collection) can be</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>carried out.</p> <ul style="list-style-type: none"> <li>Before any fossil material can be collected from the development site, the specialist involved would need to apply for a collection permit from SAHRA. Fossil material must be housed in an official collection (museum or university), while all reports and fieldwork should meet the minimum standards for palaeontological impact studies proposed by SAHRA (2012).</li> </ul>						
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>The ECO for this project must be informed that the Balfour Formation (Adelaide Subgroup, Beaufort Group, Karoo Supergroup) has a Very High Palaeontological Sensitivity.</li> <li>The ECO/designated responsible person for this project, must constantly monitor Balfour Formation area during surface clearance and construction.</li> <li>If any fossiliferous deposits are exposed by surface clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol outlined in Appendix D of this EMPr must be fully implemented. The ECO must familiarise themselves with the Chance Fossils Finds Protocol and ensure that it is kept on file on site.</li> <li>Significant fossil finds should be safeguarded and reported as soon as possible to the South African Heritage Resources Agency (SAHRA) (Contact details: 111 Harrington Street, Cape Town, 8001. PO Box 4637, Cape Town, 8000. Tel: 021 462 4502. Fax: 021 462 4509. Email: info@sahra.org.za) and Heritage Western Cape (HWC) (Contact details: 3rd floor Protea Assurance Building, 142 Longmarket St, Cape Town City Centre, Cape Town, 8000; Private Bag X9067, Cape Town, 8000 Tel: +27 (0)21 483 9598. Fax: +27 (0) 21 483 9845. Web: www.hwc.org.za) so that mitigation (recording and collection) can be carried out.</li> <li>Before any fossil material can be collected from the development site, the specialist involved would need to apply for a collection permit from SAHRA. Fossil material must be housed in an official collection (museum or university), while all reports and fieldwork should meet the minimum standards for palaeontological impact studies proposed by</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
SAHRA (2012).						

## SOILS AND AGRICULTURE

Impact Management Outcomes: Ensuring that disturbance and existence of hard surfaces causes no erosion on or downstream of the site; ensuring that vegetation clearing does not pose a high erosion risk; ensuring that topsoil loss is minimised; and ensuring that denuded areas are re-vegetated to stabilise soil against erosion.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>A system of stormwater management, which will prevent erosion on and downstream of the site, will be an inherent part of the engineering on site and needs to be included into the design.</li> <li>Undertake the necessary planning for (including detailed Site Plans, photographic record taking and compilation of Method Statements) and ensure that any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 20 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it remains at the surface. Topsoil should only be stripped in areas that are excavated. Across most of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface.</li> </ul>						
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>Implement an effective system of stormwater run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.</li> <li>Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.</li> <li>Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 20 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-</li> </ul>	To be completed post EA by relevant parties.					

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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<p>filled, the topsoil must be back-filled last, so that it remains at the surface.</p> <ul style="list-style-type: none"> <li>▪ Topsoil should only be stripped in areas that are excavated. Across most of the facility footprints, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place.</li> <li>▪ If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting (where possible), so that there is a covering of topsoil over the entire cut surface.</li> <li>▪ Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring.</li> <li>▪ Facilitate re-vegetation of denuded areas throughout the site, as dictated by the final design since most areas within the site will be gravelled/ hard surfaces..</li> </ul>	To be completed post EA by relevant parties.					
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points, and it must prevent any potential down slope erosion.</li> <li>▪ Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.</li> <li>▪ Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 20 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-</li> </ul>	To be completed post EA by relevant parties.					

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<p>filled, the topsoil must be back-filled last, so that it remains at the surface.</p> <ul style="list-style-type: none"> <li>Topsoil should only be stripped in areas that are excavated. Across most of the facility footprints, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place.</li> <li>If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting (where possible), so that there is a covering of topsoil over the entire cut surface.</li> <li>Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.</li> </ul>						

## CIVIL AVIATION

Impact Management Outcomes: To minimise the impact on nearby landing strips and other civil aviation installations.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>Ensure that feedback is obtained from the South African Civil Aviation Authority (SACAA) and Air Traffic and Navigation Services (ATNS) as well as relevant permits obtained, if necessary, and that recommendations are incorporated into the design, as necessary.</li> </ul>	To be completed post EA by relevant parties.					
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>Ensure that the mitigation and management measures recommended by the South African Civil Aviation Authority are adhered to during the operational phase.</li> </ul>	To be completed post EA by relevant parties.					



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Impact Management Outcomes: To minimise the impact on nearby landing strips and other civil aviation installations.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>Ensure that the mitigation and management measures recommended by the South African Civil Aviation Authority are adhered to during the decommissioning phase.</li> </ul>	To be completed post EA by relevant parties.					

## SOCIO-ECONOMIC IMPACTS

Impact Management Outcomes: To promote contributions to the national, regional and local economy. To promote a transparent labour and recruitment policy. Prevent unnecessary social order disturbance, general disorientation and deterioration of social capital. Realize opportunity to enhance growth of national, regional and local economy. Enhance benefits of long-term employment particularly for local residents. Benefits to be provided to the local community derived from the establishment of the proposed project. To reduce the loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>Setting targets for how much local labour should be used based on the needs of the Applicant and the availability of existing skills and people that are willing to undergo training. Opportunities for the training of unskilled and skilled workers from local communities should be maximized.</li> <li>Using local sub-contractors where possible and requiring that contractors from outside the local area that tender also meet targets for how many locals are given employment.</li> <li>Exploring ways to enhance local community benefits with a focus on broad-based Black Economic Empowerment (BEE) and preferential procurement.</li> <li>Setting up a skills and services database in partnership with the local municipality and civil society for the local area before any hiring or contracting decisions are made. This can help</li> </ul>	To be completed post EA by relevant parties.					

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	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<p>to ensure fairness and limit potential interference in hiring processes.</p> <ul style="list-style-type: none"> <li>▪ An effective employee induction programme is essential to ensuring that new employees, some of whom will be unfamiliar with the responsibilities of maintaining employment, are adequately prepared and motivated to adjust to the lifestyle required of them. This programme should incorporate life skills training as well as basic financial literacy training.</li> <li>▪ Counselling services should be made available to employees to ensure that they have adequate guidance.</li> <li>▪ Assisting smaller enterprises where possible in tendering for contracts and in accessing finance which are common constraints to their participation in projects.</li> <li>▪ Avoiding potential service provider decisions that may lead to abuse or local dissatisfaction. For example, only appointing one accommodating rental agent or one catering supplier may lead to local dissatisfaction regarding the spreading of project benefits.</li> <li>▪ As far as possible, avoid significant variation in salaries between various contractors for the same types of jobs. When variations are too high, the likelihood of dissatisfaction increases.</li> <li>▪ A 'locals first' policy with regards to construction labour needs.</li> <li>▪ The community should be able to contact the project manager or their representative to report any issues which they may have. The site manager and their representative should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.</li> <li>▪ The Applicant and the contractor should implement a Tuberculosis (TB) and HIV/AIDS awareness programme for all workers at the outset of the construction phase.</li> <li>▪ Arrangements must be made to enable workers from outside the area to return home at reasonably regular intervals. This would reduce the risk posed by non-local construction workers to local family structures and social networks.</li> </ul>						

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	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>▪ Condoms should be freely available to employees and all contractor workers.</li> <li>▪ The contractor should make the necessary arrangements for ensuring that all non-local construction workers are transported back to their place of residence once the construction phase is completed.</li> <li>▪ The Applicant must establish a communications committee early on in the project to ensure inclusive planning and regular feedback from stakeholders.</li> <li>▪ Close coordination with the municipality is required, including regular meetings.</li> <li>▪ Impacts on tourism are dependent on how the site is developed and managed to minimise negative biophysical impacts.</li> <li>▪ No construction workers, except for security personnel, should be allowed to stay on the site overnight.</li> <li>▪ The community should be able to contact the site manager to report any issues which they may have. The site manager should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.</li> <li>▪ A complaints register should be available on site to any individual who may have a particular complaint with regards to the construction or operations processes.</li> <li>▪ The Applicant should develop a Code of Conduct for the project. The Code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding landowners and land managers.</li> <li>▪ The movement of workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis.</li> <li>▪ The Applicant should implement measures to assist and, if needed, fairly compensate potentially affected surrounding landowners whereby damages to farm property, stock theft or significant disruptions to farming activities can be minimized or reduced. Measures</li> </ul>						

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>should be agreed on before construction commences.</p> <ul style="list-style-type: none"> <li>▪ The Applicant should implement measures to assist and, if needed, fairly compensate potentially affected surrounding landowners whereby damages to farm property, stock theft or significant disruptions to farming activities can be minimized or reduced. Measures should be agreed on before construction commences.</li> <li>▪ Ensure that waste, specifically plastic, is properly stored and disposed of. Refer to the “Solid and Hazardous Waste Management” section in this EMPr and ensure that the measures are adhered to.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Setting targets for how much local labour should be used based on the needs of the Applicant and the availability of existing skills and people that are willing to undergo training. Opportunities for the training of unskilled and skilled workers from local communities should be maximized.</li> <li>▪ Using local sub-contractors where possible and requiring that contractors from outside the local area that tender also meet targets for how many locals are given employment.</li> <li>▪ Exploring ways to enhance local community benefits with a focus on broad-based BEE and preferential procurement.</li> <li>▪ Setting up a skills and services database in partnership with the local municipality and civil society for the local area before any hiring or contracting decisions are made. This can help to ensure fairness and limit potential interference in hiring processes.</li> <li>▪ An effective employee induction programme is essential to ensuring that new employees, some of whom will be unfamiliar with the responsibilities of maintaining employment, are adequately prepared and motivated to adjust to the lifestyle required of them. This programme should incorporate life skills training as well as basic financial literacy training.</li> <li>▪ Counselling services should be made available to employees to ensure that they have</li> </ul>	<p>To be completed post EA by relevant parties.</p>					

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<p>adequate guidance.</p> <ul style="list-style-type: none"> <li>▪ Assisting smaller enterprises where possible in tendering for contracts and in accessing finance which are common constraints to their participation in projects.</li> <li>▪ Avoiding potential service provider decisions that may lead to abuse or local dissatisfaction. For example, only appointing one accommodating rental agent or one catering supplier may lead to local dissatisfaction regarding the spreading of project benefits.</li> <li>▪ The project must comply with the requirements of the Renewable Independent Power Producer Programme (REIPPP) and/or BEE requirements.</li> <li>▪ The Applicant must establish a communications committee early on in the project to ensure inclusive planning and regular feedback from stakeholders.</li> <li>▪ Community development should be guided by a community needs analysis, drawn up by a third party and based on local socio-economic conditions, a review of planning documents such as the IDP, and discussions with local and district-level government and community representatives. Interventions should be planned in collaboration with other energy developers in the area where relevant.</li> <li>▪ Close liaison with local and district-level municipal managers, local councillors and other stakeholders involved in socio-economic development is required to ensure that any projects are integrated into wider socio-economic development strategies and plans.</li> <li>▪ A 'locals first' policy with regards to construction and operational labour needs.</li> <li>▪ The community should be able to contact the site manager or their representative to report any issues which they may have. The site manager and his/her representative should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.</li> <li>▪ A complaints register should be available on site to any individual who may have a particular complaint with regards to the construction or operations processes.</li> </ul>						

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
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<ul style="list-style-type: none"> <li>▪ The Applicant and the contractors should, develop a Code of Conduct for the project. The Code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding landowners and land managers. For example, access on land that is not part of the development will not be allowed.</li> <li>▪ Condoms should be freely available to employees and all contractor workers.</li> <li>▪ Close coordination with the district and local municipalities is encouraged.</li> <li>▪ Impacts on tourism are dependent on how the site is developed and managed to minimise negative biophysical impacts. The measures recommended in other specialist reports to these impacts (primarily the minimisation of visual, heritage, traffic and ecological impacts) would thus also minimise tourism impacts.</li> <li>▪ No construction workers, except for security personnel, should be allowed to stay on the site overnight.</li> <li>▪ The movement of workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis.</li> <li>▪ The Applicant should implement measures to assist and, if needed, fairly compensate potentially affected surrounding landowners whereby damages to farm property, stock theft or significant disruptions to farming activities can be minimized or reduced. Measures should be agreed on before construction commences.</li> <li>▪ Ensure that waste, specifically plastic, is properly stored and disposed of. Refer to the "Solid and Hazardous Waste Management" section in this EMPr and ensure that the measures are adhered to.</li> </ul>						
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Setting targets for how much local labour should be used based on the needs of the Applicant and the availability of existing skills and people that are willing to undergo training. Opportunities for the training of unskilled and skilled workers from local</li> </ul>	To be completed post EA by relevant parties.					

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	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>communities should be maximized.</p> <ul style="list-style-type: none"> <li>▪ Using local sub-contractors where possible and requiring that contractors from outside the local area that tender also meet targets for how many locals are given employment.</li> <li>▪ Exploring ways to enhance local community benefits with a focus on broad-based BEE and preferential procurement.</li> <li>▪ Setting up a skills and services database in partnership with the local municipality and civil society for the local area before any hiring or contracting decisions are made. This can help to ensure fairness and limit potential interference in hiring processes.</li> <li>▪ An effective employee induction programme is essential to ensuring that new employees, some of whom will be unfamiliar with the responsibilities of maintaining employment, are adequately prepared and motivated to adjust to the lifestyle required of them. This programme should incorporate life skills training as well as basic financial literacy training.</li> <li>▪ Counselling services should be made available to employees to ensure that they have adequate guidance.</li> <li>▪ Assisting smaller enterprises where possible in tendering for contracts and in accessing finance which are common constraints to their participation in projects.</li> <li>▪ Avoiding potential service provider decisions that may lead to abuse or local dissatisfaction. For example, only appointing one accommodating rental agent or one catering supplier may lead to local dissatisfaction regarding the spreading of project benefits.</li> <li>▪ As far as possible, avoid significant variation in salaries between various contractors for the same types of jobs. When variations are too high, the likelihood of dissatisfaction increases.</li> <li>▪ A 'locals first' policy with regards to decommissioning labour needs.</li> <li>▪ The community should be able to contact the site manager or their representative to report any issues which they may have. The site manager and their representative should be</li> </ul>						

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<p>stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.</p> <ul style="list-style-type: none"> <li>▪ A complaints register should be available on site to any individual who may have a particular complaint with regards to the decommissioning process.</li> <li>▪ A Code of Conduct should be established for the project. The Code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding landowners and land managers. For example, access on land that is not part of the development will not be allowed.</li> <li>▪ A TB and HIV/AIDS awareness programme should be implemented for all workers at the outset of the decommissioning phase.</li> <li>▪ Arrangements must be made to enable workers from outside the area to return home at reasonably regular intervals. This would reduce the risk posed by non-local decommissioning workers to local family structures and social networks.</li> <li>▪ Condoms should be freely available to employees and all contractor workers.</li> <li>▪ The contractor should make the necessary arrangements for ensuring that all non-local construction workers are transported back to their place of residence once the construction phase is completed.</li> <li>▪ Close coordination with the municipality is required, including regular meetings.</li> <li>▪ Impacts on tourism are dependent on how the site is developed and managed to minimise negative biophysical impacts.</li> <li>▪ No construction workers, except for security personnel, should be allowed to stay on the site overnight.</li> <li>▪ The community should be able to contact the site manager to report any issues which they may have. The site manager should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.</li> <li>▪ The movement of workers on and off the site should be closely managed and monitored by</li> </ul>						



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<p>the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis.</p> <ul style="list-style-type: none"> <li>Measures should be implemented to assist and, if needed, fairly compensate potentially affected surrounding landowners whereby damages to farm property, stock theft or significant disruptions to farming activities can be minimized or reduced. Measures should be agreed on before construction commences.</li> <li>Ensure that waste, specifically plastic, is properly stored and disposed of. Refer to the "Solid and Hazardous Waste Management" section in this EMPr and ensure that the measures are adhered to.</li> </ul>						

## TRAFFIC IMPACTS

<b>Impact Management Outcomes:</b> To ensure that no more than normal deterioration and additional maintenance costs are experienced by the Road Authority during the construction and operating phases. It is required that any design affecting any Proclaimed Provincial Road must carry The Western Cape Government Transport and Public Works - Roads Department Branch's Chief Directorate Road Design's approval before implementation thereof may commence. Avoid or minimise impacts that additional traffic generation will have on the road network. Potential traffic congestion and delays on the surrounding road network and associated noise and dust pollution						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>It is recommended that the developer conduct a conditional assessment of all public gravel roads prior to construction and implement an ongoing assessment and maintenance programme for addressing construction-related defects.</li> </ul>						To be completed post EA by relevant parties.

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<ul style="list-style-type: none"> <li>▪ If abnormal loads need to be transported by road to the site, a permit will need to be applied for in terms of Section 81 of the National Road Traffic Act and authorisation needs to be obtained from the relevant road authorities to modify the road reserve to accommodate turning movements at intersections (if necessary).</li> <li>▪ It is anticipated that a few sections of the DR2404 may require widening from approximately 4 m to 6 m to accommodate the turning movements of the abnormal load vehicles.</li> <li>▪ Provincial Roads' public accessibility must be retained (if not closed/ de-proclaimed to become private or servitude roads) and they must be evaluated for the purposes of construction, operation, and decommissioning.</li> <li>▪ The route to the sites should be further investigated to ensure that abnormal loads are not obstructed at any point by geometric, height and width limitations along the route.</li> <li>▪ Discussions must be held with the relevant landowners on which the internal access farm road leading to the sites is located, prior to commencement to confirm requirements and details of the agreement.</li> <li>▪ Ensure that the requirements for use of the internal farm access roads leading to the sites are addressed and considered in the design, as and where applicable.</li> <li>▪ Provide a Transport Traffic Plan to the Provincial and Municipal Road Department (if required).</li> <li>▪ A Road Maintenance Plan should be developed for the internal farm access roads (i.e., internal private roads leading off the DR2404) that will be used. The plan should address requirements such as, but not limited to, grading, dust suppressant mechanisms, drainage (where required), signage, and speed limits. The Road Maintenance Plan must ensure regular maintenance of the roads. The Road Maintenance Plan must be communicated with the relevant authorities, where required, and must be provided to the surrounding community forum prior to commencement of construction.</li> <li>▪ A geotechnical and geometric design report, including improvement proposals, must be</li> </ul>						

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compiled to ensure that all the roads that will be affected by these developments during the construction phase are adequately improved and maintained before any other construction activity may commence on any of the farm portions. Note that any design affecting any Proclaimed Provincial Road must carry the approval of the Chief Directorate (Road Design) of the Western Cape Department of Transport and Public Works.						
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>▪ It is recommended that traffic be controlled during construction, and that adequate signage be erected, at pre-identified narrow bridges along Road MR607.</li> <li>▪ Stagger the construction of switching stations rather than constructing them simultaneously.</li> <li>▪ Schedule abnormal load traffic in off-peak periods.</li> <li>▪ Stagger delivery of abnormal loads.</li> <li>▪ Adhere to traffic laws and permit conditions relating to the transportation of abnormal loads.</li> <li>▪ Stagger delivery of plant, equipment, materials and components.</li> <li>▪ Construct an on-site concrete batching plant.</li> <li>▪ Transport staff in off-peak periods and by bus or minibus.</li> <li>▪ Maintain farm fences.</li> <li>▪ Erect road signage informing motorists of property accesses and designated animal road crossings.</li> <li>▪ Maintain road verges along local and access roads to provide safe walking space for pedestrians.</li> <li>▪ Reduce speed of vehicles in the vicinity of construction to an appropriate speed in order to reduce the need for increased road maintenance.</li> </ul>	To be completed post EA by relevant parties.					

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<ul style="list-style-type: none"> <li>▪ Construct gravel access and internal roads according to <i>TRH20 – Unsealed Roads: Design Construction and Maintenance</i>.</li> <li>▪ Contractor to avoid use of gravel roads in wet weather, where possible.</li> <li>▪ Implement a road maintenance programme under the auspices of the respective transport department.</li> <li>▪ Appropriate, timely and high-quality maintenance of gravel roads.</li> <li>▪ Continuous engagement with the Northern Cape Department of Roads and Public Works (NCDRPW) and Western Cape Department of Transport and Public Works (WCDTPW).</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Group transportation of facility staff.</li> <li>▪ Off-peak scheduling of maintenance-related traffic.</li> <li>▪ Appropriate, timely and high-quality maintenance of internal gravel roads</li> <li>▪ Reduce speed of vehicles in the vicinity of the substation and surrounds to an appropriate speed in order to reduce the need for increased road maintenance.</li> <li>▪ Implement a road maintenance programme under the auspices of the respective transport department.</li> <li>▪ Adhere to all traffic laws and regulations.</li> <li>▪ Continuous engagement with the NCDRPW and WCDTPW.</li> </ul>	To be completed post EA by relevant parties.					
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Schedule abnormal load traffic in off-peak periods.</li> <li>▪ Stagger delivery of abnormal loads.</li> </ul>	To be completed post EA by relevant parties.					

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<ul style="list-style-type: none"> <li>▪ Adhere to traffic laws and permit conditions relating to the transportation of abnormal loads.</li> <li>▪ Stagger delivery/removal of plant, equipment, materials and components.</li> <li>▪ Transport staff in off-peak periods and by bus or minibus.</li> <li>▪ Maintain farm fences.</li> <li>▪ Erect road signage informing motorists of property accesses and designated animal road crossings.</li> <li>▪ Maintain road verges along local and access roads to provide safe walking space for pedestrians.</li> <li>▪ Reduction in vehicle speed at and approaching the development access Avoid use of gravel roads in wet weather.</li> <li>▪ Implement a road maintenance programme under the auspices of the respective transport department.</li> <li>▪ Appropriate, timely and high-quality maintenance of gravel roads.</li> <li>▪ Continuous engagement with the NCDRPW and WCDTPW.</li> </ul>						

## GEOHYDROLOGY

Impact Management Outcomes: To prevent the lowering of groundwater levels as a result of over-abstraction (should ground water be used during the project phases). To reduce the potential groundwater pollution.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
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<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>▪ If groundwater from existing boreholes is to be used as a water source during the project phases, then a registration process must be followed for the use of existing boreholes, i.e., Section 39 of the National Water Act (Act 36 of 1998, as amended). Ensure that the Department of Water and Sanitation (DWS) are consulted with to confirm the need and requirements of a General Authorisation for use of existing boreholes in the vicinity. In addition, agreements must be put in place with the current landowners for the use of groundwater. These agreements must be legally valid documents.</li> <li>▪ If no such agreements can be put in place, and if ground water needs to be used, then additional boreholes may be drilled on the relevant farm portions, followed by yield and water quality testing, and then authorization from DWS/ relevant management agency to use the ground water will be required.</li> <li>▪ Monitoring of abstracted volumes would allow for the determination of the cumulative abstraction across each of the farm portions and boreholes to be made. This is to be achieved using flow meters.</li> <li>▪ Monitoring of groundwater levels, to evaluate the response of groundwater abstraction on the water table. This is to be conducted manually or using telemetry systems.</li> <li>▪ Monitoring of general field chemistry, e.g. pH, EC and temperature. However, during the construction period, the analysis and sample collection should include SANS 241 analysis for one year before and after the construction period – if the project schedule allows.</li> <li>▪ Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. A designated area should be established at the construction site camp for this purpose.</li> <li>▪ Any engines that stand in one place for an excessive length of time must have drip trays.</li> </ul>	To be completed post EA by relevant parties.					

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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>▪ Diesel fuel storage tanks should be above ground on an impermeable concrete surface in a bunded area.</li> <li>▪ Construction vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the construction site camp for this purpose, if off-site refuelling is not possible.</li> <li>▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, and reported.</li> <li>▪ Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> <li>▪ Biodegradable cleaning agents should be selected for cleaning project infrastructure.</li> </ul>						
<b>CONSTRUCTION PHASE</b>						
<p>Note mitigation only applies if groundwater is abstracted:</p> <ul style="list-style-type: none"> <li>▪ The boreholes that are to be used must be correctly yield tested prior to use according to the National Standard (SANS 10299-4:2003, Part 4 – Test pumping of water boreholes) so that the correct pump sizes and installation depths can be determined. This includes a Step Test, Constant Discharge Test and recovery monitoring.</li> <li>▪ The boreholes should also be sampled and chemically and microbiologically analysed by a SANAS accredited laboratory.</li> <li>▪ Once the boreholes are in use they should be equipped with:               <ul style="list-style-type: none"> <li>○ Observation pipes - so that the water levels can be measured (either manually or by data loggers);</li> <li>○ Flow meters – to assess how much water is used and thereby all authorisations in place for use of the water are adhered to; and</li> <li>○ Sampling tap – to enable annual sampling to ensure the groundwater is safe for continued use – especially if it is to be used as drinking water.</li> </ul> </li> <li>▪ Adhere to the borehole's safe yield and to monitor water levels and flow. Avoid using old or</li> </ul>	To be completed post EA by relevant parties.					

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<p>damaged construction equipment and vehicles and ensure that they are well maintained and regularly serviced in order to ensure no leakages. All vehicles and other equipment (generators etc.) must be regularly serviced to ensure they do not spill oil.</p> <ul style="list-style-type: none"> <li>▪ Any engines that stand in one place for an excessive length of time must have drip trays.</li> <li>▪ Diesel fuel storage tanks, if required, should be above ground on an impermeable concrete surface in a bunded area.</li> <li>▪ Vehicles should be refueled on paved (impervious) areas, optimally off-site. If off-site refueling is not possible, a designated area and impermeable surface should be established at the construction site camp for this purpose. If liquid product is being transported it must be ensured this does not spill during transit.</li> <li>▪ If spillages occur during refueling, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, and reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> <li>▪ Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.</li> <li>▪ Vehicle and washing areas must also be on paved surfaces and the by-products removed to an evaporative storage area or a hazardous waste disposal site (if the material is hazardous).</li> <li>▪ Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. Any engines that stand in one place for an excessive length of time must have drip trays. Diesel fuel storage tanks, if required, should be above ground on an impermeable surface in a bunded area.</li> <li>▪ Vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the construction site camp for this purpose, if off-site refuelling is not possible.</li> <li>▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, as reported.</li> </ul>						



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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>▪ Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> <li>▪ Biodegradable cleaning agents should be selected for cleaning project infrastructure.</li> <li>▪ Barriers and liner(s) to be successfully implemented to prevent chemical contamination of underground water during foundation construction.</li> <li>▪ Concrete batching plants should be located away from natural springs and areas having a shallow water table.</li> <li>▪ Water usage should be closely monitored to ensure that underground water resources are utilised sustainably in relation to livestock requirements and that over-abstraction does not take place.</li> <li>▪ Waste water must be sufficiently managed utilising waste water treatment methods such as settling ponds before it gets discharged.</li> <li>▪ Waste water can also be recycled in order to re-use it for construction operations such as road construction.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<p>The following mitigation only applies if groundwater is abstracted:</p> <ul style="list-style-type: none"> <li>▪ The boreholes that are to be used must be correctly yield tested prior to use according to the National Standard (SANS 10299-4:2003, Part 4 – Test pumping of water boreholes) so that the correct pump sizes and installation depths can be determined. This includes a Step Test, Constant Discharge Test and recovery monitoring.</li> <li>▪ Adhere to the borehole's safe yield and to monitor water levels and flow. Ensure that all electrolyte or chemicals stored or used on site have secondary containment systems in place with reliable leak detection, annunciation in place.</li> <li>▪ Ensure that all chemicals are handled on concrete bunded surfaces and not on bare soil.</li> <li>▪ Any waste products produced by the project infrastructure should be removed and disposed of appropriately.</li> </ul>	To be completed post EA by relevant parties.					

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Impact Management Outcomes: To prevent the lowering of groundwater levels as a result of over-abstraction (should ground water be used during the project phases). To reduce the potential groundwater pollution.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ Waste water produced by fire hydrants should not be allowed to runoff into the environment. It is recommended that all BESS's are placed a minimum of 50 m from any borehole, such as in the current layout.</li> <li>▪ Operational and maintenance complexes should not be located near natural springs and/or shallow water tables, such as in the current layout.</li> </ul> <p>This only applies if groundwater is abstracted:</p> <ul style="list-style-type: none"> <li>▪ The frequency and volume of underground water utilised must be closely monitored to avoid over abstraction.</li> <li>▪ Best management practices or wastewater management should be utilised such as low-flow faucets and toilets, wastewater treatment systems and wastewater plants.</li> <li>▪ The use of biodegradable cleaning agents and disposing of hazardous waste according to local regulations are strongly advised.</li> </ul>						
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> <li>▪ Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. Any engines that stand in one place for an excessive length of time must have drip trays.</li> <li>▪ Diesel fuel storage tanks, if required, should be above ground on an impermeable surface in a bunded area.</li> <li>▪ Vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the site camp for this purpose, if off-site refuelling is not possible.</li> <li>▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, as reported.</li> <li>▪ Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> </ul>	To be completed post EA by relevant parties.					

## GEOTECHNICAL

Impact Management Outcomes: To minimise disturbance during earthworks for foundations, access roads, platforms and laydown areas. Minimise erosion due to clearing of vegetation and alteration of natural drainage. To minimise ground disturbance during earthworks to remove platforms, foundations, road rehabilitation and removal of surface and sub surface structures.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>▪ A Stormwater Management Plan (SWMP) must be developed in the pre-construction phase by a qualified professional. It should detail the stormwater structures and management interventions that must preferably be installed to manage the increase of surface water flows directly into any natural systems, where possible and lawful (in consultation with suitably qualified professionals). Effective stormwater management must include effective stabilisation (e.g., gabions and Reno mattresses) of exposed soil.</li> <li>▪ Ensure that the design allows for suitable stormwater management systems to be installed along roads and other areas in order to divert water away from zones where the proposed infrastructure is to be constructed. Drainage systems should be designed by an appropriately qualified professional. Drainage in the region should be designed appropriately.</li> <li>▪ Investigate and confirm the geotechnical suitability of each structure (or other appropriate level of investigation) prior to construction (i.e., determine that soil with an adequate bearing capacity is obtained beneath each footing). Such investigations would be necessary prior to construction.</li> <li>▪ The seismicity in the region should be considered during design.</li> <li>▪ Favour dolerite as an aggregate (as opposed to Karoo sandstones and mudstones).</li> <li>▪ Any road cuttings should be designed by and appropriately qualified professional.</li> </ul>	To be completed post EA by relevant parties.					
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Favour dolerite as an aggregate (as opposed to Karoo sandstones and mudstones).</li> <li>▪ Any road cuttings should be designed by an appropriately qualified professional.</li> <li>▪ Drainage in the region should be designed and managed appropriately.</li> </ul>	To be completed post EA by relevant parties.					

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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>▪ Investigate and confirm the geotechnical suitability of each structure (or other appropriate level of investigation) prior to construction (i.e. determine that soil with an adequate bearing capacity is obtained beneath each footing). Such investigations would not be required to fulfil the requirements of the BA process. However, it would be necessary prior to construction.</li> <li>▪ Only strip vegetation necessary for the next phase of construction.</li> <li>▪ Install temporary drainage to divert stormwater away from active construction activities, where required.</li> <li>▪ SWMP must be developed in the preconstruction phase. It should detail the stormwater structures and management interventions that must be installed to manage the increase of surface water flow directly into any natural systems (in consultation with suitably qualified professionals). Effective stormwater management must include effective stabilisation (e.g. gabions and Reno mattresses) of exposed soil.</li> <li>▪ Suitable stormwater management systems must be installed along roads and other areas and be monitored during the first few months of use. Any erosion/sedimentation must be resolved through any additional interventions that may be necessary (e.g., extension, energy dissipaters, spreaders, etc.).</li> <li>▪ Where impacted through construction-related activities, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled.</li> <li>▪ Sloped areas stabilised using designed structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly.</li> <li>▪ Any rehabilitation should be scheduled to ensure rehabilitation can take place at the optimal time for vegetation establishment.</li> <li>▪ Where earthwork is being undertaken near any watercourses, slopes must be stabilised using suitable materials, e.g. sandbags or geotextile fabric, to prevent sand and rock from entering the channel.</li> <li>▪ Appropriate rehabilitation and re-vegetation measures for any disturbed watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and</li> </ul>						

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>incrementally stabilised as soon as development allows.</p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Provision must be made for refuelling 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.</li> <li>▪ Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used.</li> <li>▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilt material, as reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Implement the stormwater management plan. Generic management for typical infrastructure of the proposed development, including similar erosion control and stormwater management during the construction phase, and no regular maintenance activities to take place outside of the authorised footprint and all vehicles to remain on authorised roads and tracks.</li> <li>▪ Install drainage to divert stormwater away from activities, roads/tracks, structures, where required.</li> <li>▪ Generic management for typical infrastructure of the proposed development, including: <ul style="list-style-type: none"> <li>○ SWMP must be developed in the preconstruction phase and should detail the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems, where possible and lawful. Effective stormwater management must include effective stabilisation (e.g. gabions and Reno mattresses) of exposed soil etc.</li> <li>○ Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion /</li> </ul> </li> </ul>	To be completed post EA by relevant parties.					

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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<p>sedimentation must be resolved through any additional interventions that may be necessary (e.g., extension, energy dissipaters, spreaders, etc.).</p> <ul style="list-style-type: none"> <li>o Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments.</li> <li>o No regular maintenance activities to take place outside of the authorised footprint and all vehicles to remain on authorised roads and tracks.</li> </ul> <ul style="list-style-type: none"> <li>▪ During the execution of the operations, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained.</li> <li>▪ Provision must be made for refuelling at the storage area by protecting the soil with an impermeable groundcover/bunding. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained.</li> <li>▪ Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used.</li> <li>▪ Electrolyte spillage to be mitigated through leak detection, double containment and suitably designed bunding for the structure, approved by a qualified professional.</li> <li>▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, as reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> <li>▪ The maintenance of project infrastructure must be closely monitored and the use of hazardous chemical products must be avoided.</li> </ul>						
<b>DECOMMISSIONING PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Only drive and park vehicles where necessary.</li> <li>▪ Land rehabilitation to near natural state, i.e. removal of foundations and backfilling of any resultant voids within the soil, as well as removal of hard surfaced areas. Replacement soil should be sourced locally to ensure homogeneity.</li> </ul>	To be completed post EA by relevant parties.					

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<b>Impact Management Actions (these apply to the Project footprint area and the access roads on site)</b>	<b>Implementation</b>			<b>Monitoring</b>		
	<b>Responsible Person</b>	<b>Method of Implementation</b>	<b>Timeframe for Implementation</b>	<b>Responsible Person</b>	<b>Frequency</b>	<b>Evidence of Compliance</b>
<ul style="list-style-type: none"> <li>▪ Reinststate natural topography where cut-to-fill embankments have been constructed.</li> <li>▪ Implement generic environmental management procedures for infrastructure.</li> <li>▪ During the execution of the decommissioning, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g., including ensuring that equipment is well maintained.</li> <li>▪ Provision must be made for refuelling 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.</li> <li>▪ Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used.</li> <li>▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, as reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.</li> <li>▪ Minimise erosion due to clearing of vegetation and alteration of natural drainage</li> </ul>						

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**GENERIC MANAGEMENT ACTIONS TO SUPPLEMENT THE PRE-APPROVED GENERIC EMPR**

Impact Management Outcomes: Ensure overall best practice is achieved.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<b>DESIGN PHASE</b>						
<ul style="list-style-type: none"> <li>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 and parking areas, equipment storage and cleaning areas (including emergency equipment) and the placement of emergency assembly points, staff accommodation/offices, cooking and ablution facilities (including conservancy tanks etc.), water storage areas, waste and wastewater management.</li> <li>All contractors must be made aware of all these access routes and the maintenance requirements and conditions of use.</li> </ul>						
<b>CONSTRUCTION PHASE</b>						
<ul style="list-style-type: none"> <li>The sensitivities captured in the sensitivity maps included in Appendix C of this EMPR must also be considered when placing the temporary site camp, workshop and ablution facilities.</li> <li>Ensure that adequate containment structures are provided for the temporary storage of liquid dangerous goods and hazardous materials on site (such as chemicals, oil, fuel, hydraulic fluids, lubricating oils etc.). Appropriate bund areas must be provided for the storage of these materials at the site camp. Leak detection monitoring systems must be implemented.</li> <li>Record and report all significant fuel, oil, hydraulic fluid or electrolyte spills or leaks so that appropriate clean-up measures can be implemented. A copy of these records must</li> </ul>	To be completed post EA by relevant parties.					



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Impact Management Outcomes: Ensure overall best practice is achieved.					
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring	
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Evidence of Compliance
<p>be made available to authorities on request throughout the project lifecycle.</p> <ul style="list-style-type: none"> <li>▪ The National Department of Environment, Forestry and Fisheries<sup>2</sup> and the Directorate: Pollution and Chemicals Management is to be immediately duly notified of any incident in terms of Section 30 of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended (NEMA). In terms of Section 30 of NEMA, an “incident” means an unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property.</li> <li>▪ It is recommended that the removed vegetation be taken to a garden waste chipping facility for composting or be disposed of at an appropriately licenced facility, but it may not be disposed of within the development footprint.</li> <li>▪ The Department of Human Settlements, Water and Sanitation must be immediately notified of any pollution to surface water or groundwater resources due to the proposed project activities.</li> <li>▪ Portable chemical toilet/s (ablution facilities) at the construction camp, must be serviced weekly for the duration of the construction phase.</li> <li>▪ A conservancy tank system at the O&amp;M buildings should be carefully managed to limit the risk of health, aesthetic and environmental problems during operation. The following mitigation actions must be adhered to: <ul style="list-style-type: none"> <li>▪ Care should be taken with the installation of conservancy tanks to prevent cracks that could lead to leaks over time. Proper and regular servicing must be scheduled to prevent possible groundwater contamination.</li> <li>▪ The tank must be provided with a fresh air inlet and an intercepting grease tap.</li> <li>▪ The tank must have an airtight manhole cover to allow access to the tank for the removal and safe disposal of the tank contents.</li> <li>▪ The conservancy tank must be located out of the 1:100-year flood line of any water resources or alternatively, more than 100 meters from the edge of a water resource or a</li> </ul> </li> </ul>					

<sup>2</sup> Now operating as the Department of Forestry, Fisheries and the Environment (DFFE)

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring	
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Evidence of Compliance
<p>borehole which is utilized for drinking water or stock watering, whichever is further.</p> <ul style="list-style-type: none"> <li>▪ The tank must have an airtight manhole cover to allow access to the tank for the removal and safe disposal of the tank contents.</li> <li>▪ No industrial waste or refuse may be discharged into the conservancy tank except by written agreement with the relevant authorities.</li> <li>▪ The size of the conservancy tank must be determined by both the frequency of removal of its contents to the local Wastewater Treatment Works and by the quantity of sewage anticipated from the proposed project. Written confirmation must be obtained from the local municipality stating that it will provide the service of removal of the tank contents.</li> <li>▪ The content of the tank must be removed by a vacuum tanker and conveyed to a local Wastewater Treatment Works that is capable of processing the volume and contents of the conservancy tank. On-going written confirmation must also be obtained from the local municipality and retained as proof that the contents of the conservancy tank has been received for the proper treatment at the said wastewater treatment works.</li> <li>▪ A contingency plan must be drawn up to protect against overflow of the conservancy tank. A sump or lined pond can be designed below the conservancy tank to contain any overflows.</li> <li>▪ Ingress of stormwater into the conservancy tank must be prevented.</li> <li>▪ A detailed geotechnical Investigation must be done to determine the most appropriate location of the conservancy tank.</li> <li>▪ Ensure that regular audits (i.e., twice weekly) of water systems and all water-related infrastructure (e.g., pipes, pumps, reservoirs, toilets, taps, etc.) are conducted to identify possible water leakages. Such infrastructure must be immediately repaired.</li> <li>▪ Suitable emergency and safety signage (including traffic safety) is to be provided on-site, and any areas which may pose a safety risk (including hazardous substances), clearly demarcated. Emergency numbers for the local police, fire department, Eskom and the local municipality must be placed in a prominent clearly visible area on-site.</li> <li>▪ Ensure that the contact details of the local municipality, Eskom and emergency response officials, such as the police and fire department are kept on file and clearly sign-posted</li> </ul>					

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Impact Management Outcomes: Ensure overall best practice is achieved.					
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring	
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Evidence of Compliance
<p>on site.</p> <ul style="list-style-type: none"> <li>▪ Ensure staff onsite are trained on how to deal with the clean-up of a hazardous substances.</li> <li>▪ Ensure that an open communication strategy is created and maintained between the Project Developer, Contractor and owners (or managers) of the adjacent farms. Portable chemical toilet/s (ablution facilities) at the construction camp, must be serviced.</li> <li>▪ Dust generated must comply with the National Dust Control Regulations (Government Notice No. R. 827 of 1 November 2013) promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).</li> <li>▪ 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"> <li>▪ Safety notifications;</li> <li>▪ No pollution;</li> <li>▪ No unnecessary damage to biodiversity;</li> <li>▪ No unauthorized fires; and</li> <li>▪ No littering.</li> </ul> </li> <li>▪ All spillage of oil (and other hydrocarbons) 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.</li> <li>▪ All contaminated soil must first be treated (if required by the hazardous waste disposal facility) prior to disposal. Proof of treatment (such as waybills) should be retained on file for auditing purposes.</li> <li>▪ A suitably positioned, and clearly demarcated waste and access-controlled waste collection site must be identified and provided.</li> <li>▪ The Contractor's water abstraction and use records must be kept and filed and made available at all times.</li> <li>▪ Promote waste reduction, re-use, and recycling opportunities on site during the</li> </ul>					

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Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>construction phase.</p> <ul style="list-style-type: none"> <li>▪ The required infrastructure, such as bins and storage areas, should be available to ensure the ease of separation of waste at the source, and waste diversion.</li> <li>▪ All recyclable waste generated should be managed and made available to recyclers.</li> </ul>						
<b>OPERATIONAL PHASE</b>						
<ul style="list-style-type: none"> <li>▪ Ensure that the relevant construction mitigation and management measures are adhered to during the operation phase.</li> <li>▪ 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"> <li>○ Safety notifications;</li> <li>○ No pollution;</li> <li>○ No unnecessary damage to biodiversity;</li> <li>○ No unauthorized fires; and</li> <li>○ No littering.</li> </ul> </li> <li>▪ All spillage of oil (and other hydrocarbons) 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.</li> <li>▪ All contaminated soil must first be treated (if required by the hazardous waste disposal facility) prior to disposal. Proof of treatment (such as waybills) should be retained on file for auditing purposes.</li> <li>▪ A suitably positioned, and clearly demarcated waste and access-controlled waste collection site must be identified and provided.</li> <li>▪ The Contractor's water abstraction and use records must be kept and filed and made available at all times.</li> <li>▪ Promote waste reduction, re-use, and recycling opportunities on site during the</li> </ul>	To be completed post EA by relevant parties.					

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<p>construction phase.</p> <ul style="list-style-type: none"> <li>▪ The required infrastructure, such as bins and storage areas, should be available to ensure the ease of separation of waste at the source, and waste diversion.</li> <li>▪ All recyclable waste generated should be managed and made available to recyclers.</li> </ul>						
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> <li>▪ Ensure that the relevant construction mitigation and management measures are adhered to during the decommissioning phase.</li> <li>▪ 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"> <li>○ Safety notifications;</li> <li>○ No pollution;</li> <li>○ No unnecessary damage to biodiversity;</li> <li>○ No unauthorized fires; and</li> <li>○ No littering.</li> </ul> </li> <li>▪ All spillage of oil (and other hydrocarbons) 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.</li> <li>▪ A suitably positioned, and clearly demarcated waste and access-controlled waste collection site must be identified and provided.</li> <li>▪ The Contractor's water abstraction and use records must be kept and filed and made available at all times.</li> <li>▪ Promote waste reduction, re-use, and recycling opportunities on site during the decommissioning phase.</li> <li>▪ The required infrastructure, such as bins and storage areas, should be available to ensure the ease of separation of waste at the source, and waste diversion.</li> </ul>	To be completed post EA by relevant parties.					

ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

Impact Management Outcomes: Ensure overall best practice is achieved.						
Impact Management Actions (these apply to the Project footprint area and the access roads on site)	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> <li>▪ All recyclable waste generated should be managed and made available to recyclers.</li> </ul>						

## **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.

## APPENDIX A – CV OF THE EAP

### CV OF PAUL LOCHNER

<b>Name of firm</b>	CSIR
<b>Name of staff</b>	Paul Lochner
<b>Profession</b>	Environmental Assessment and Management
<b>Position in firm</b>	Manager: CSIR Environmental Management Services
<b>Nationality</b>	South African

#### Biographical Sketch

Paul Lochner is an environmental assessment practitioner (EAP) at the CSIR in Stellenbosch, with 30 years of experience in a wide range of environmental assessment and management studies. Paul commenced work at CSIR in 1992, after completing a B.Sc. degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at focused on wetlands and estuarine management; environmental engineering in the coastal zone; and coastal zone management plans. Since 2008, Paul has been the leader and manager of the Environmental Management Services (EMS) group within CSIR that has been at the forefront of advancing environmental assessment in South Africa. This group currently consists of approximately 10 to 20 environmental scientists, planners and engineers, with offices in Stellenbosch, Cape Town and Durban. Paul's particular experience is in environmental planning and assessment for renewable energy, electricity grid infrastructure, desalination, oil & gas, wetlands & coastal zone management, and industrial & port development. He has been closely involvement in the research and application of Strategic Environmental Assessment (SEA) in South Africa, and also has wide experience in Environmental & Social Impact Assessment, Environmental Management Programmes (EMPRs) and Environmental Screening Studies. He has been the project leader for over 40 SEAs and EIAs over the past 28 years. He also served as project leader for a suite of SEAs commissioned by the DFFE from 2014 to 2020. Paul is a Registered EAP (2019/745) with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

#### Tertiary Education

Year	Degree	Institution
1992	MPhil in Environmental Science	University of Cape Town
1990	BSc in Civil Engineering awarded with Honours	University of Cape Town

#### Professional Registration

- Environmental Assessment Practitioners Association of South Africa (EAPASA), Registration Number 2019/745
- Member of the International Association for Impact Assessment South Africa (IAIAsa)



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### Employment Record

Period	Employer	Position
1992 - current	CSIR (Stellenbosch)	Environmental scientist
2008 – current	CSIR (Stellenbosch)	Group Leader

### List of Key Project Experience

Date	Project Description	Role	Client
2022-ongoing	Review of permitting and governance for the Mogalakwena Mine, Limpopo (Confidential)	Project leader	Anglo American
2021 Ongoing	Environmental Performance Compliance Study for Foundries in South Africa (Phase 2)	Project reviewer	National Foundries Technology Network
2021 ongoing	Advisory services for environmental permitting for Anglo American's Carbon Neutrality and Smart Power projects in South Africa, Namibia, Botswana and Zimbabwe	Project leader	Anglo American
2021	Gemsbok EA Amendments for the 75MW x 3 solar projects at Kenhardt, Northern Cape	Project reviewer	Mulilo
2021 ongoing	Pilot Study on Permitting (Confidential)	Project leader	Anglo American
2022	Opportunities and constraints analysis for offshore wind potential for South Africa - inventory and collation of spatial data	Project leader	World Bank
2021-2022	Environmental assessment training and support to provincial government in the independent power producer sector in the Eastern Cape province	Project leader	Dept of Economic Development, Environmental Affairs & Tourism, Eastern Cape
2021	Renewable Energy Feasibility Plan for the Atlantis Special Economic Zone, Cape Town	Lead co-leader	Atlantis Special Economic Zone
2021	Basic Assessment for 1350 MW Aardvark solar PV facilities near Copperton	Project leader	ABO Wind
2020-2021	Basic Assessments for 1575 MW Solar Photovoltaic Facilities and associated Electrical Grid Infrastructure near Touws River, Western Cape	Project leader	Veroniva
2019	Independent Expert review of the ecology study as part of the EIA and EMPR for diamond prospecting at Bloemhof Dam Nature Reserve, North West province	Independent reviewer	DEA Appeals Office

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Date	Project Description	Role	Client
2018-2019	Greater Saldanha Bay Strategic Environmental Assessment (SEA): Phase 1 Monitoring and Decision Support System	Project leader	Western Cape provincial government
2018-2019	Environmental Screening Study for a proposed 100 to 150 megalitre/day desalination facility for City of Cape Town, Phase 1: Pre-feasibility study	Project co-leader	City of Cape Town and iX Engineers
2018-2019	EIA for 150 MW wind power project in Ghana	Proposal and EIA Quality Assurance	Volta River Authority and Seljen Consult Ltd
2019	Environmental Assessment for the Kenhardt solar PV facility and electrical infrastructure (100 MW x 3), Northern Cape	Project leader	Scatec Solar Africa (Pty) Ltd
2017-2019	SEA for Wind & Solar Photovoltaic Energy development in South Africa (Phase 2)	Project reviewer	DEA & national Dept of Energy (DOE)
2017-2019	SEA for the Expansion of EGI Corridors in South Africa	Project reviewer	DEA, DOE, iGas, Eskom (national electricity utility)
2017-2019	SEA for Energy Corridors and development of a gas pipeline network for South Africa	Project reviewer	DEA, DOE, iGas, Eskom (national electricity utility)
2017-2019	SEA for Aquaculture Development in South Africa (marine and freshwater)	Project leader	DEA and national Dept of Agriculture Forestry and Fisheries (DAFF)
2018	Environmental Assessments for the Vryburg Solar project (115 MW x 3) in the Vryburg Renewable Energy Development Zone (REDZ)	Co-project manager and co-author	Veroniva & Scatec
2018	EIA for West Bank Waste Water Treatment works marine outfall pipeline, East London	Independent reviewer	WSP and Buffalo City Municipality
2017-2018	Site selection and environmental screening for a proposed 120 – 150 ML/day desalination plant for the City of Cape Town	Project leader	City of Cape Town and iX Engineers
2017-2018	EIA and EMP for Icyari Coltan Mine, Rwanda	Project reviewer	Mawarid Mining Rwanda Ltd (MMRL), UAE
2016-2017	SEA for the Square Kilometre Array radio-telescope in the Karoo, South Africa	Project leader	DEA and DST
2016-2017	SEA for Shale Gas Development in the Karoo region of South Africa	Project co-leader	DEA and other government

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Date	Project Description	Role	Client
			departments
2015-2016	SEA for the development of Electrical Grid Infrastructure for South Africa	Project leader	DEA and Eskom (national electricity utility)
2017	EIA for the 75 MW x 12 solar photovoltaic energy projects near Dealesville, Free State	Project leader	Mainstream Renewable Power SA
2014-2015	EIA for Ishwati Emoyeni 140 MW wind energy project and supporting electrical infrastructure at Murraysburg, Western Cape	Project leader	Windlab South Africa
2012-2015	SEA for identification of renewable energy zones for wind and solar photovoltaic projects in South Africa	Project leader	DEA and other national government departments
2012-2013	Environmental Screening Study (ESS) for a desalination plant for the City of Cape Town	Project leader	City of Cape Town & WorleyParsons
2012-2013	EIA for the desalination plant for the Saldanha area	Project leader	West Coast District Municipality & WorleyParsons
2012-2013	EIA for the manganese export terminal at the Port of Ngqura and Coega Industrial Development Zone (IDZ)	Project leader	Transnet
2011 – 2012	EIA (x2) for 100 MW solar photovoltaic project at Blocuso and 100 MW solar PV project at Roode Kop in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA (x2) for 75 MW solar photovoltaic project at GlenThorne and 75 MW project at Valleydora, in the Free State	Project leader	Solaire Direct
2010-2011	More than 10 Basic Environmental Assessments (BAs) for solar photovoltaic projects in the Western Cape, Northern Cape, Eastern Cape and Free State	Project leader	Conducted for Dutch, German, French and South African companies
2010/2011	EIA for a 100 MW wind project at Zuurbron and a 50 MW wind project Broadlands in the Eastern Cape	Project leader	WindCurrent SA (German-based company)
2010-2011	EIAs (x4) for the proposed InnoWind wind energy projects near Swellendam, Heidelberg, Albertinia and Mossel Bay (totalling approx 210 MW), Western Cape, South Africa	Project leader	InnoWind South Africa (Pty) Ltd
2009-2010	EIA for the proposed Electrawinds wind energy facility of 45-75 MW capacity in the Coega IDZ, Eastern Cape	Project leader	Electrawinds N.V. (Belgium)
2009-2010	EIA for proposed 180 MW Jeffreys Bay wind energy	Project Leader and	Mainstream

ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

Date	Project Description	Role	Client
	project, Eastern Cape	co-author	Renewable Power South Africa
2009-2010	EIA for the proposed 70 megalitre/day desalination plant at Mile 6 near Swakopmund, Namibia	Project leader	NamWater, Namibia
2009	ESS for a proposed Deepwater Port, Container Hub and Industrial Development Zone, Ghana	Project Manager	Project Management International Pty Ltd
2009	EMP for the Operational Phase of the Berg River Dam, Franschoek, South Africa	Project leader and report co-author	TCTA (national water supply utility), South Africa
2006	Environmental Impact Assessment (EIA) for extension of Port of Ngqura, Eastern Cape	Project Leader and co-author	Transnet National Port Authority
2004-2005	Environmental and Social Impact Assessment (ESIA) report for the proposed alumina refinery near Sosnogorsk, Komi Republic, Russia	Project manager and co-author	Komi Aluminium Russia, IFC, European Bank for Reconstruction & Development (EBRD)
2005	Guideline for Environmental Management Plans (EMPs) for the Western Cape province	Author	Dept of Environmental Affairs & Development Planning, Western Cape
2003	Environmental Management Plan for the Operational Phase of the wetlands and canals at Century City, Cape Town	Project leader and lead author	Century City Property Owners' Association
2002	Environmental Impact Assessment for the proposed Pechiney aluminium smelter at Coega, South Africa	Project Manager and lead author	Pechiney, France
1999-2000	Cape Action Plan for the Environment: a biodiversity Strategy and Action Plan for the Cape Floral Kingdom - legal, institutional, policy, financial and socio-economic component	Project manager and contributing writer	World Wide Fund for Nature (WWF): South Africa and Global Environment Facility (GEF)
1999	Management Plan for the coastal zone between the Eerste and Lourens River, False Bay, South Africa	Project manager and lead author	Heartland Properties and Somchem (a Division of Denel)
1998	Environmental Assessment of the Mozal Matola Terminal Development proposed for the Port of Matola, Maputo, Mozambique	Project manager and author	SNC-Lavalin-EMS
1996-1997	Strategic Environmental Assessment (SEA) for the proposed Industrial Development Zone and Harbour at Coega, Port Elizabeth, South Africa	SEA project manager and report writer	Coega IDZ Initiative Section 21 Company
1995-1996	Environmental Impact Assessment and EMP for Development Scenarios for Thesen Island, Knysna,	Project manager	Thesen and Co.

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Date	Project Description	Role	Client
	South Africa	and report writer	
1996	Environmental Impact Assessment for the Blouvllei wetlands at Century City, Cape Town	Project manager and report writer	Ilco Homes Ltd (now Monex Ltd)
1995	Environmental Impact Assessment for the Saldanha Steel Project, South Africa	Report author and project manager	Saldanha Steel Project
1994	Environmental Impact Assessment for the upgrading of resort facilities on Frégate Island, Seychelles	Project management, co-author, process facilitator	Schneid Israelite and Partners
1994	Environmental Impact Assessment for exploration drilling in offshore Area 2815, Namibia	Project manager and lead author	Chevron Overseas (Namibia) Limited
1994	Management Plan for the Rietvllei Wetland Reserve, Cape Town	Project manager and lead author	Southern African Nature Foundation (now WWF-SA)

#### Recent Journal Publications and Peer Reviewed Papers

A comprehensive list of publications is available on request, with a summary provided below of recent journal publications, book chapters and peer reviewed conference papers:

- Fischer D, Lochner P and Annergarn H, 2019. Evaluating the effectiveness of Strategic Environmental Assessment to facilitate renewable energy planning and improved decision-making: a South African case study, *Impact Assessment and Project Appraisal* - article ID: IAPA 1619389.
- Cape L., Retief F., Lochner P., Fischer T., and Bond A., 2018. Exploring pluralism: Different stakeholder views of the expected and realised value of strategic environmental assessment (SEA). *Environmental Impact Assessment Review*, Volume 69, March 2018, Pages 32-41.
- Cape L., Lochner P. and Fischer D., 2017. SEAs for major infrastructure programmes in SA. *IAIA17 Conference Proceedings - 37th Annual Conference of the International Association for Impact Assessment*, 4-7 April 2017 | Le Centre Sheraton Montreal | Montreal | Canada | [www.iaia.org](http://www.iaia.org)
- Schreiner, G.O., Scholes, R.J., Snyman-Van der Walt, L., De Jager, M., S, Esterhuise., Dlodla, A., Lochner, P.A., Wright, J., Atkinson, D., Hardcastle, P., Kotze, H. 2017. Advancing a participatory and science-based approach to policy formulation for shale gas development in South Africa. In: Eds Whitton, J., Cotton, M., Brasier, K. 2017. *Citizen and other stakeholder participation in unconventional fossil fuel land use decision-making, policy formation, regulatory practice or other governance mechanisms*. London: Routledge.
- Lochner P, Mabin M & Cape L, 2015, Recent Strategic Environmental Assessment experience in South Africa and national principles, in *IAIA16 (Japan) Conference Proceedings*.

#### Language Capabilities

	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Afrikaans	Average	Average	Average

**Environmental Assessment  
Practitioners Association  
of South Africa**



Registration No. 2019/745

***Herewith certifies that***

**PAUL LOCHNER**

***is registered as an***

**Environmental Assessment Practitioner**

***Registered in accordance with the prescribed criteria of Regulation 15. (1)  
of the Section 24H Registration Authority Regulations  
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the  
National Environmental Management Act (NEMA), Act No. 107 of 1998, as  
amended).***

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar



ENVIRONMENTAL MANAGEMENT PROGRAMME: Basic Assessment for the proposed development of the Padloper Solar PV Facility 1 (i.e., Padloper PV 1), the proposed development of 132 kV Overhead Power Line between the proposed Padloper PV 1 and the proposed authorised Ishwati Emoyeni Collector Substation (i.e., Padloper EGI 1), and their associated infrastructure, near Murraysburg in the Northern and Western Cape Provinces

## CV OF DHIVESHNI MOODLEY

<b>Name of firm</b>	CSIR
<b>Name of staff</b>	Dhiveshni Moodley
<b>Profession</b>	Environmental Assessment Practitioner
<b>Position in firm</b>	Junior Environmental Scientist and Assessment Practitioner
<b>Nationality</b>	South African
<b>Specialisation and Research interest:</b>	Geographic Information Systems; Spatial Analysis; Mapping; Environmental Assessment and Management; Strategic Environmental Assessment; Food security; Flood Vulnerability Assessment, Hydropedological Assessment.

### Biographical Sketch

Dhiveshni Moodley is an EAP Intern at the CSIR in Stellenbosch in the EMS group of the CSIR. Dhiveshni holds a BSc, BSc Honours (cum laude) and MSc (cum laude) degrees in Environmental Science from the University of KwaZulu-Natal. She has about two year's work experience in flood risk, hydropedological- and wetland functional assessment specialist studies, as well as conducting BAs and Scoping/EIAs in the Renewable Energy sector. Her key interest lies in using GIS analyses to apply the formation of accurate, feasible solutions to complex environmental challenges. Dhiveshni is a registered Candidate Natural Scientist (Reg. No. 1472997/19) with the SACNASP.

### Tertiary Education

Year	Degree	Institution
2019	MSc. Environmental Science ( <i>Cum Laude</i> )	University Kwa-Zulu Natal
2017	BSc. Hons. Environmental Science ( <i>Cum Laude</i> )	University Kwa-Zulu Natal
2016	BSc. Environmental Science	University Kwa-Zulu Natal

### Professional Registration

- South African Council for Natural Scientific Professions (SACNASP), Candidate Professional Natural Scientist (Reg. no. 1472997/19) (2019 onwards).

### Employment Record

Period	Employer	Position
<b>2020 – current</b>	Council for Scientific and Industrial Research – Environmental Management Services (EMS)	Environmental Scientist and Assessment Practitioner
<b>2020 - 2020</b>	South African Sugar Research Institute – Agronomy	Agronomy and GIS Research Intern.
<b>2019 - 2020</b>	Aeon Nexus (Pty) Ltd - Durban	Junior Environmental Consultant

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### Short Courses, Seminars and Conferences

Year	Course, Seminar, Conference	Institution
2023	The Roles and Responsibilities of EAPs in the EIA Process	IAIAsa
2022	Celsius 1.5: Impact Assessment and Climate Change	IAIA
2020	Conflict Resolution course	CiLLA
2020	Groundwater, Boreholes, and Water use Licenses-E-learning lecture	Ground Water Division of the Geological Society of South Africa
2019	Flood Determination Workshop	Acute Training Management
2019	Department of Water and Sanitation Hydropedology-Course 1, Digital Soils South Africa	Centre for Wildlife Management, University of Pretoria

### List of Key Project Experience

Date	Project Description	Role	Client
In progress	Scoping and Environmental Impact Assessment Processes for the Proposed Development of three Wind Energy Facilities; Kwagga 1 (279 MW), Kwagga 2 (341 MW) and Kwagga 3 (204.6 MW), near Beaufort West in the Western Cape Province	Project Manager	ABO Wind renewable energies (Pty) Ltd
In progress	Basic Assessment Processes for the Proposed Development of seven Solar Photovoltaic (PV) Energy Facilities; namely Rinkhals 1 (30 MW), Rinkhals 2 (30 MW), Rinkhals 3 (150 MW), Rinkhals 4 (150 MW), Rinkhals 5 (150 MW), Rinkhals 6 (150 MW) and Rinkhals 7 (150 MW), near Kimberley in the Free State and Northern Cape Provinces	Project Officer	ABO Wind renewable energies (Pty) Ltd
December 2019	The KwaDukuza Mall and Mixed-Use Precinct Wetland Functional Update Assessment, iLembe District Municipality, KwaZulu-Natal	Project member- Wetland delineation and assessment inputs	Wallace & Green Consulting (Pty) Ltd
July 2019	Specialist desktop hydropedology assessment for the Ballito Hills Development, eThekweni Municipality, KwaZulu-Natal	Project member- Hydropedological assessment	Triplo4 Sustainable Solutions (Pty) Ltd
July 2019	Specialist desktop hydropedology assessment for the Umhlali Development, eThekweni Municipality, KwaZulu-Natal	Project member- Hydropedological assessment	Triplo4 Sustainable Solutions (Pty) Ltd



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Date	Project Description	Role	Client
June 2019	Specialist desktop hydrogeology assessment for the Sheffield Waste Water Treatment Works, eThekweni Municipality, KwaZulu-Natal	Project member-Hydrogeological assessment	Triplo4 Sustainable Solutions (Pty) Ltd

#### Software Skills

- |  |                 |
|--|-----------------|
| • ESRI Arcmap                                | • QGIS          |
| • Microsoft Office (Word, Excel, PowerPoint) | • ERDAS IMAGINE |
| • Google Earth                               | • Pix4Dmapper   |

#### Honours and Awards

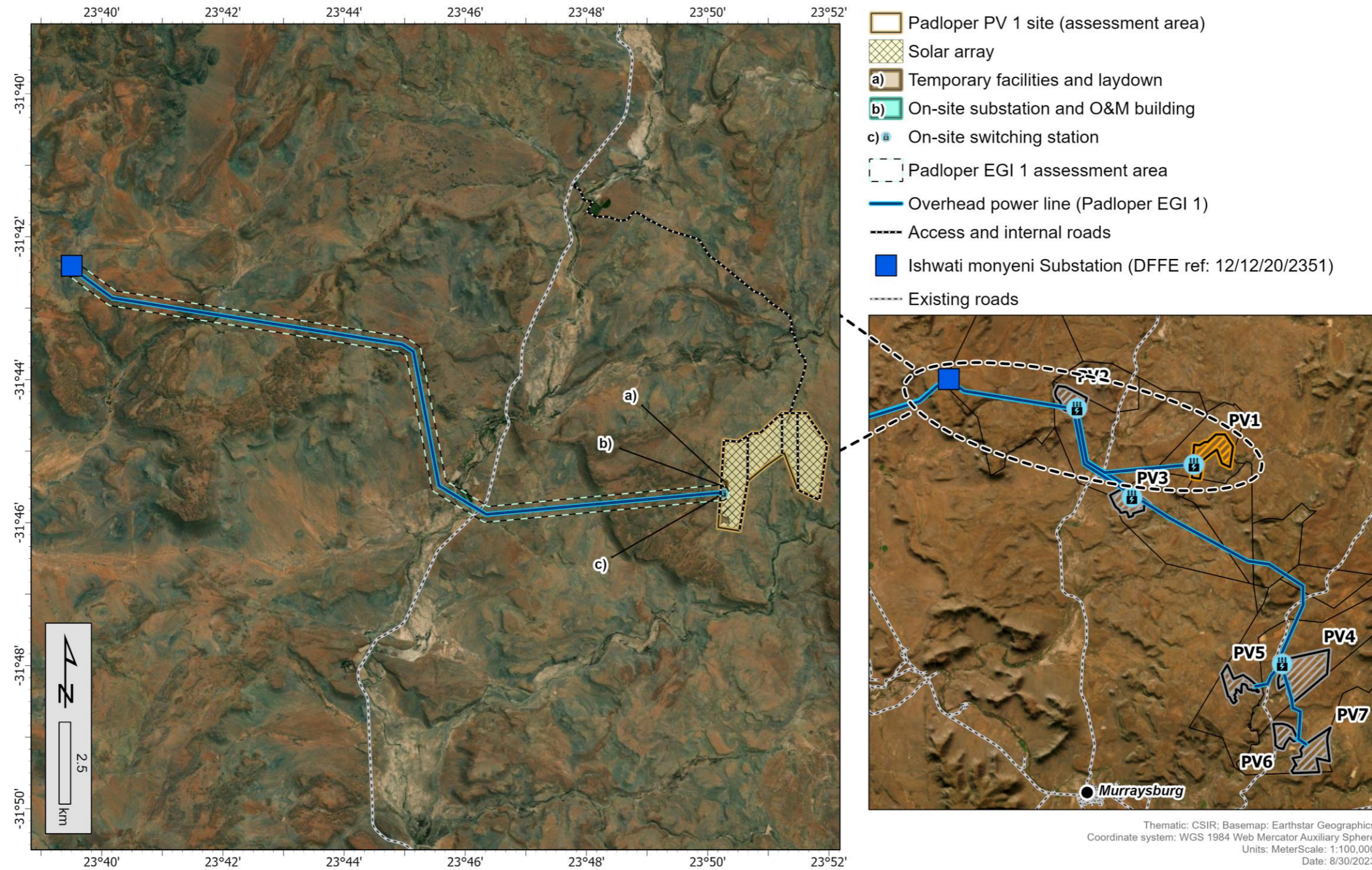
- Allan Gray Achievement Award nominee (2017)
- Golden Key International Academic Honours Association (2016 – current)

#### Language Capabilities

	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent

## APPENDIX B – SITE LAYOUT

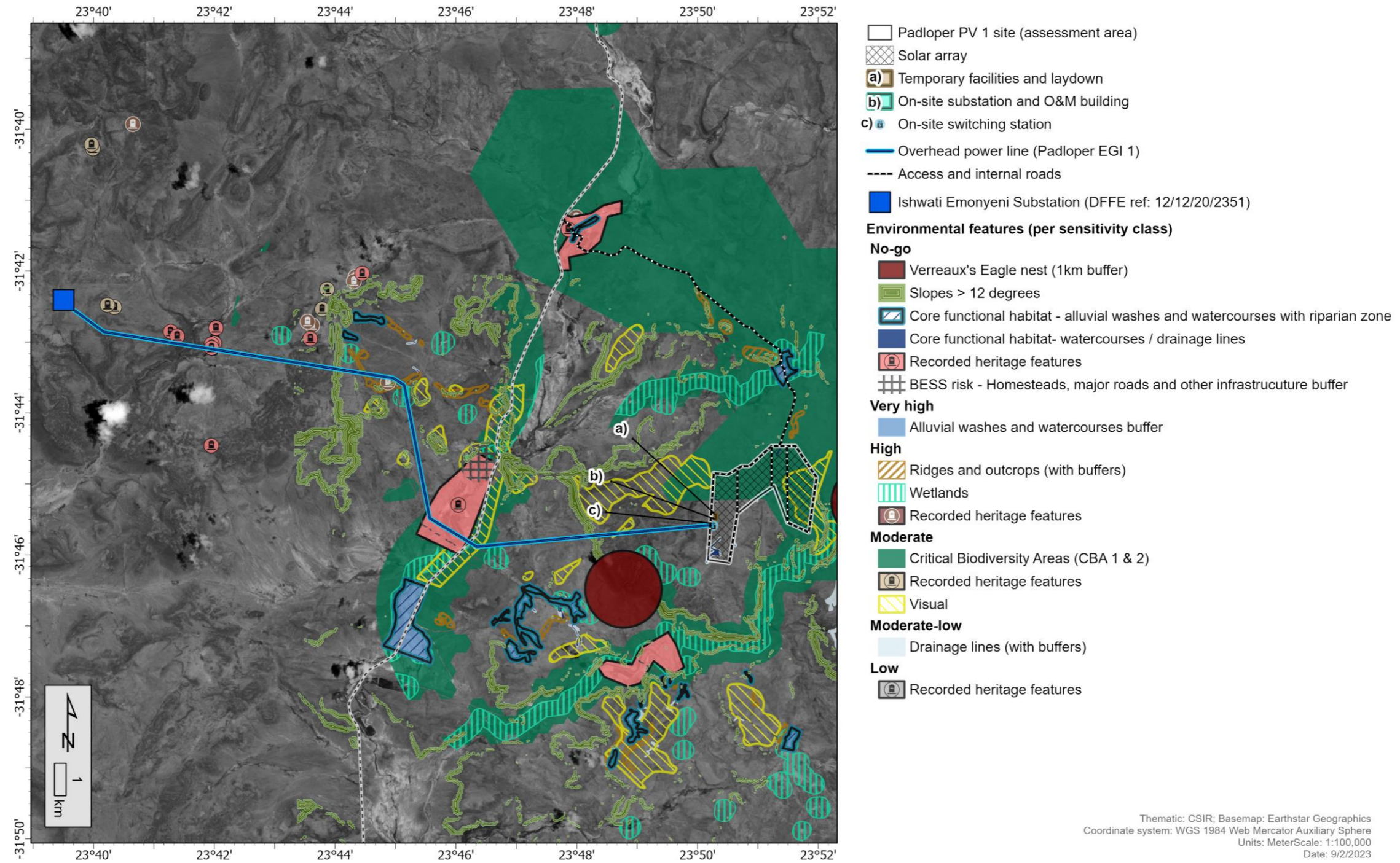
### Proposed Padloper Solar Photovoltaic (PV) and Electricity Grid Infrastructure (EGI) cluster near Murraysburg, in the Western Cape and Northern Cape, South Africa



APPENDIX B-1. Site layout map showing the project infrastructure placement of the proposed Padloper Solar PV Facility and EGI 1 as assessed during the BA Phase. Note the location of the on-site switching station.

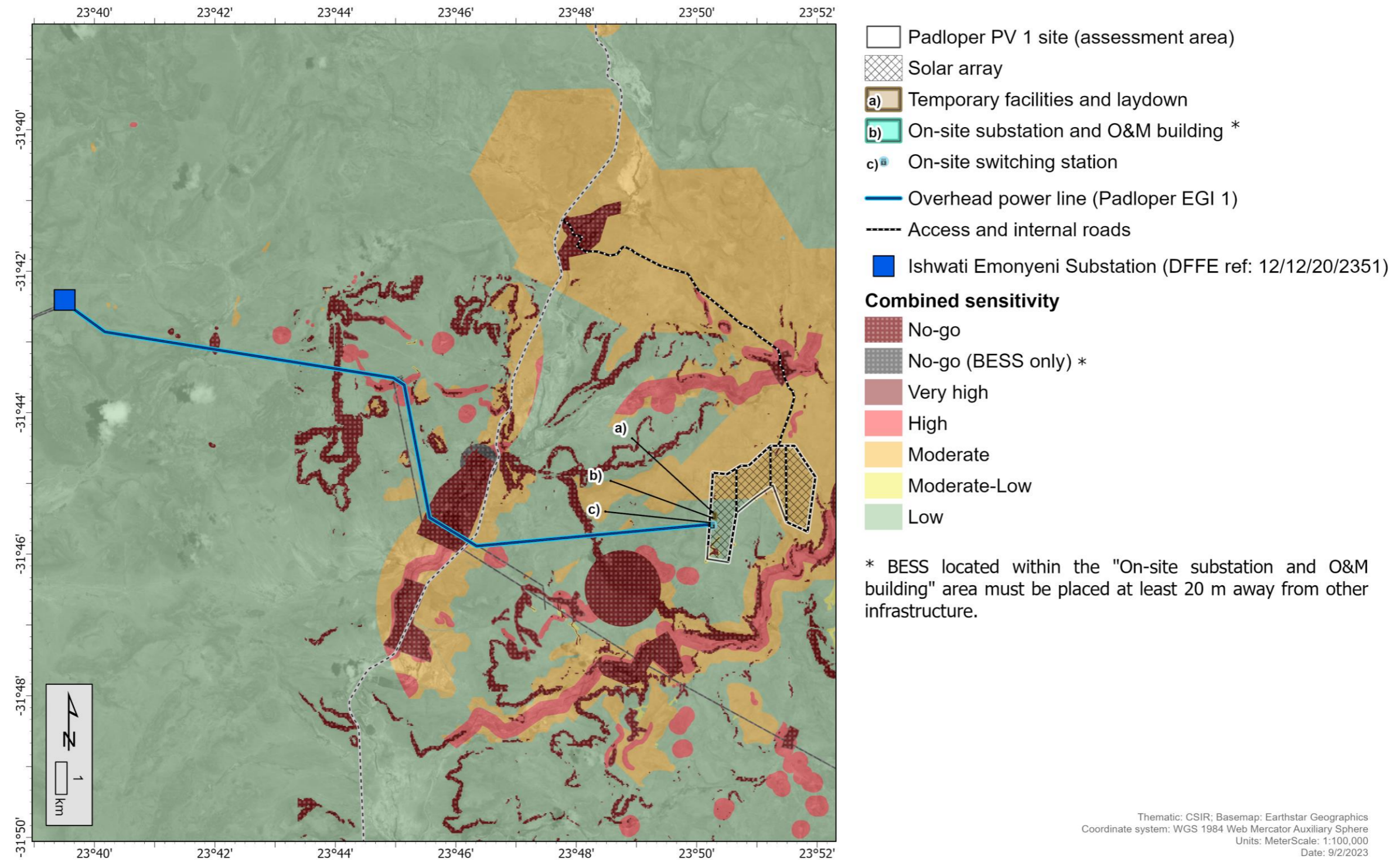
## APPENDIX C – FEATURES & COMBINED SENSITIVITY LAYOUT MAPS

### Proposed Padloper Solar Photovoltaic (PV) and Electricity Grid Infrastructure (EGI) cluster near Murraysburg, in the Western Cape and Northern Cape, South Africa



APPENDIX C-1. Features map for the proposed Padloper Solar PV Facility and EGI 1 as assessed during the BA Phase.

## Proposed Padloper Solar Photovoltaic (PV) and Electricity Grid Infrastructure (EGI) cluster near Murraysburg, in the Western Cape and Northern Cape, South Africa



APPENDIX C-2. Combined sensitivity map for the proposed Padloper Solar PV Facility and EGI 1 project site as assessed during the BA Phase.

## APPENDIX D – CHANCE FIND PROCEDURE FOR PALAEOLOGICAL RESOURCES

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- **MONITORING**

A constant monitoring presence over the period during which excavations for developments are made, by either an archaeologist or palaeontologist, is generally not practical.

The field supervisor/foreman and workers involved in digging excavations must be encouraged and informed of the need to watch for potential fossil and buried archaeological material. Workers seeing potential objects are to report to the field supervisor who, in turn, will report to the ECO. The ECO will inform the archaeologist and/or palaeontologist contracted to be on standby in the case of fossil finds. This procedure applies to the Applicants permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

To this end, responsible persons must be designated. This will include hierarchically:

- The field supervisor/foreman, who is going to be most often in the field.
- The Environmental Control Officer (ECO) for the project.
- The Project Manager/Site Agent.

- **RESPONSE BY PERSONNEL IN THE EVENT OF FOSSIL FINDS**

In the process of excavation fossils may be spotted in the hole sides or bottom, or as they appear in excavated material on the spoil heap.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the Applicant, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- Protect the find site from further disturbance and safeguard all fossil material in danger of being lost such as in the excavator bucket and scattered in the spoil heap.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations.
- The ECO or site agent must immediately inform the SAHRA and/or the contracted standby palaeontologist of the find and provide via email the information about the find, as detailed below.
  - Date.
  - Position of the excavation (GPS) and depth.
  - A description of the nature of the find.

- Digital images of the excavation showing vertical sections (sides) and the position of the find showing its depth/location in the excavation.
- A reference scale must be included in the images (tape measure, ranging rod, or object of recorded dimensions).
- Close-up, detailed images of the find (with scale included).

The SAHRA and/or the contracted standby palaeontologist will assess the information and a suitable response will be established which will be reported to the Applicant and the ECO, such as whether rescue excavation or rescue collection by a palaeontologist is necessary or not. The response time/scheduling of the rescue fieldwork is to be decided in consultation with Applicant /owner and the ECO. It will probably be feasible to “leapfrog” the find and proceed to the next excavation, or continue a trench excavation farther along, so that the work schedule and machine time is minimally disrupted. The strategy is to rescue the material as quickly as possible.

- **APPLICATION FOR A PERMIT TO COLLECT FOSSILS**

A permit from SAHRA is required to excavate fossils. The applicant should be the qualified specialist responsible for assessment, collection and reporting (palaeontologist). Should fossils be found that require rapid collecting, application for a palaeontological permit must immediately be made to SAHRA. All fossils must be deposited at a SAHRA-approved institution. In addition to the information and images of the find, the application requires details of the registered owners of the sites, their permission and a site-plan map.

This procedure applies to the Applicant’s permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

**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 (plants, insects, bone or trace fossils) 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 Applicant to assist in recognizing the trace fossils such as stromatolites in the dolomites or the Quaternary bones, rhizoliths, traces. 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 Applicant /environmental officer 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 have finished, then no further monitoring is required.