



ENVIRONMENTAL MANAGEMENT PROGRAMME ADDENDUM

for

HOTAZEL 2 BATTERY ENERGY STORAGE SYSTEM

on

Remainder Farm York A 279

In terms of the

National Environmental Management Act, 1998 (Act No. 107
of 1998), as amended & Environmental Impact Regulations
2014

Prepared for Applicant: Hotazel Solar Facility 2 (Pty) Ltd

By: Cape EAPrac

Report Reference: JMO637/16

Department Reference: 14/12/16/3/3/2/2017 (2022-09-0036)

Case Officer: Mathlodi Mogorosi

Date: 1 August 2022

Cape EAPrac

Cape Environmental Assessment Practitioners

Tel: +27 44 874 0365 PO Box 2070, George 6530
Fax: +27 44 874 0432 17 Progress Street, George

www.cape-eaprac.co.za



APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:

Cape EAPrac Environmental Assessment Practitioners

PO Box 2070

George

6530

Tel: 044-874 0365

Fax: 044-874 0432

PURPOSE OF THIS REPORT:

For implementation by EPC & O&M / BESS contractor

APPLICANT:

Hotazel Solar Facility 2 (Pty) Ltd

CAPE EAPRAC REFERENCE NO:

JMR637/16

DEPARTMENT REFERENCE:

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ADDENDUM TO ENVIRONMENTAL MANAGEMENT PROGRAMME

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended & Environmental Impact Regulations 2010

HOTAZEL 2– Battery Energy Storage System

Remainder Farm York A 279.

Submitted for:

Stakeholder Review & Comment

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Report Issued by:

Cape Environmental Assessment Practitioners

Tel: 044 874 0365

PO Box 2070

Fax: 044 874 0432

17 Progress Street

Web: www.cape-eaprac.co.za

George 6530

ORDER OF REPORT

Environmental Management Programme - Legislated Requirements Checklist

Environmental Management Programme for Battery Energy Storage– Main Report

- Appendix A:** Site Development Plan .
- Appendix B:** Environmental Management Programme for main facility
- Appendix C:** Environmental Authorisation for main facility
- Appendix D:** Battery Energy Storage Risk Assessment

ENVIRONMENTAL MANAGEMENT PROGRAMME LEGISLATIVE REQUIREMENTS

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of how these requirements were incorporated into this EMPr.

Compliance checklists in terms of these requirements are included in table 1 below.

Table 1: EMPr compliance with Appendix 4 of Regulation 982

Requirement	Description
Details of the EAP who prepared the EMPr; and; The expertise of the EAP to prepare an EMPr, including a curriculum vitae.	This EMPr was prepared by Louise Mari van Zyl Assisted by Dale Holder of Cape EAPrac Ms van Zyl and Mr Holder have more than 17 years experience in environmental assessment.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	<p>This EMP covers all aspects of the project as currently under assessment, namely the addition of a battery energy storage system for the Authorised Hotazel 2.</p> <p>This EMPr for the Battery Energy Storage System must be read in conjunction with the EMPr for the overall facility attached in Appendix B of this report. The main facility EMPr attached in Appendix B deals with the other components of the authorised development such as:</p> <ul style="list-style-type: none"> • PV Arrays and Mounting Structures; • inverter stations; • on-site substation; • grid connection • auxiliary buildings, • laydown area; • internal electrical reticulation network (underground cabling); • internal road / track network; • access road; • electrified perimeter fencing.
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	<p>The Site Development Plan attached in Appendix A, includes the sensitive features identified by participating specialists and indicates how these have been incorporated.</p> <p>The “exclusion areas” identified on this SDP as well as all areas outside of the perimeter fencing of the BESS are considered as no go areas for construction activities. Please refer to the main facility EMPr attached in appendix B for details relating to the environmental sensitivities applicable to the remainder of the development.</p>
A description of the impact management objectives, including management statements, identifying the impacts	<u>Section 3 of this EMPr.</u>

Requirement	Description
<p>and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including –</p> <ul style="list-style-type: none"> (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities. 	
<p>A description and identification of impact management outcomes required for the aspects contemplated above.</p>	<p><u>Table 5 in section 2 of the EMPr</u></p>
<p>A description of the proposed impact management actions, identifying the way the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to –</p> <ul style="list-style-type: none"> (i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable. 	<p><u>Throughout the report. Summarised in Section 13 of the EMPr.</u></p>
<p>The method of monitoring the implantation of the impact management actions contemplated above.</p>	<p><u>Section 8.</u></p>
<p>The frequency of monitoring the implementation of the impact management actions contemplated above.</p>	<p><u>Section 8.</u></p>
<p>An indication of the persons who will be responsible for the implementation of the impact management actions.</p>	<p><u>Figures 1 & 2 and Section 8</u></p>
<p>The time periods within which the impact management actions must be implemented.</p>	<p><u>Throughout the EMPr</u></p>
<p>The mechanism for monitoring compliance with the impact management actions.</p>	<p><u>Section 8</u></p>
<p>A program for reporting on compliance, considering the requirements as prescribed in the Regulations.</p>	<p><u>Section 8</u></p>
<p>An environmental awareness plan describing the way –</p>	<p><u>Section 4.2 and 4.3</u></p>

Requirement	Description
(i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	
Any specific information that may be required by the competent authority.	A high-level risk assessment form part of the Addendum to the EMPr for the facility. This high-level risk assessment is attached in Appendix D.

DEA COMMENT ON EMPr

This section will be updated on receipt of comment from the competent authority.

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ABBREVIATIONS

AC	Alternating Current
Alt.	Alternative
BESS	Battery Energy Storage System
CARA	Conservation of Agricultural Resources Act (43 of 1983)
CBA	Critical Biodiversity Area
CDSM	Chief Directorate Surveys and Mapping
DEFF	Department of Environment Forestry and Fisheries
DEANC	Department of Environmental Affairs & Nature Conservation (Northern Cape)
DEIR	Draft Environmental Impact Report
DoE	Department of Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Impact Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
ESA	Environmental Site Agent / Ecological Support Area
EMPr	Environmental Management Programme
ER	Engineers Representative
ha	Hectare
I&APs	Interested and Affected Parties
IPP	Independent Power Producer
KI / Klt	Kilo Litre
Km	Kilometre
Km/h	Kilometres per hour
kV	Kilo Volt
LLRC	Low Level River Crossing
lt	Litre
m	Metre
m²	Metres squared
m³	Metres cubed
MW	Mega Watt
No.	Number
PM	Post Meridiem; "Afternoon"
PV	Photovoltaic
REDs	Road Environmental Dust Suppressant
SAHRA	South African National Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards

SKA SA Square Kilometre Array South Africa
WULA Water Use Licence Application

1. INTRODUCTION

Cape EAPrac has been appointed by the Applicant, Hotazel Solar Facility 2 (Pty) Ltd, as the independent **Environmental Assessment Practitioner** (EAP) responsible for preparation of the Addendum to the **Environmental Management Programme** (EMPr) for Hotazel 2. The purpose of this revision is to include the relevant environmental management actions and outcomes associated with the proposed addition of a Battery Energy Storage System (BESS) within the authorised footprint of the facility.

This EMPr addendum deals specifically with the proposed BESS, and must be read in conjunction with the EMPr for the main facility as appended in Appendix B. The provisions within the original EMPr (Appendix B) and the existing Environmental Authorisation (EA) remain in force and are applicable to the remainder of the Facility. Furthermore, this EMPr must be read in conjunction with the BESS Risk Assessment attached in Appendix D as well as the amendment to the original EA (once it is issued).

This EMPr is a management tool used to minimise and mitigate the potential environmental impacts associated with the BESS, while at the same time, maximising the benefits.

A detailed description of the proposed project and a description of the affected environment are provided in the Amendment Assessment Report compiled by Cape EAPrac (JMO637/14) which should be referred to where necessary.

This EMPr is submitted in compliance with the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed amendment to the EA for this facility.

It must be noted that the EA for this facility includes a condition that requires that the final EMPr be submitted to the competent authority for approval, prior to the commencement of construction activities. This condition remains in force regardless of the submission of this Revised EMPr.

1.1. EMPr Approval & Revisions

This EMPr must be read in conjunction with the original EMPr (Appendix B) and once authorised, becomes a legally binding document. Contravention with this document constitutes a contravention with the Environmental Authorisation as amended.

The EMPr may however require further amendments at certain stages through the lifespan of the project. The incidences which may require the amendment of this document include:

- Incorporation of conditions of approval contained in the Environmental Authorisation or any amendment thereto;
- Outcome of a technology specific BESS risk assessment;
- Changes in environmental legislation;
- Results of post-construction monitoring and audit;
- Per instruction from the competent authority; and
- Changes in technology and best practice principles.

Should an amendment of any of the EMPr objectives be required, an application for this must be submitted to the competent authority and approved before such changes are implemented. Changes to the EMPr actions may be affected without the need for an amendment process,

subject to approval by the ECO. In such an instance, a formal amendment will have to be affected as part of the first environmental audit report.

1.2. Contractual Obligation

This EMPr must be included in ALL tender and contract documentation associated with this project. It must be noted that this EMPr is relevant and binding on the activities associated with the construction and operation of the BESS. The overall EMPr in Appendix B is relevant and binding on the remainder of the activities associated with the development as a whole.

For the Construction phase, the EPC Contractor (including any sub-contractors) must ensure that sufficient budget is allocated to the implementation of this EMPr until such time as final rehabilitation is completed.

For the operational phase, the O&M Contractor (including any sub-contractors) must ensure that sufficient budget is allocated to the Operational requirements in this EMPr.

1.3. Organisational Requirements

In order to ensure effective implementation of the EMPr, it is necessary to identify and define the organisational structure for the implementation of this document.

The proposed organisational structure during **construction** is as follows:

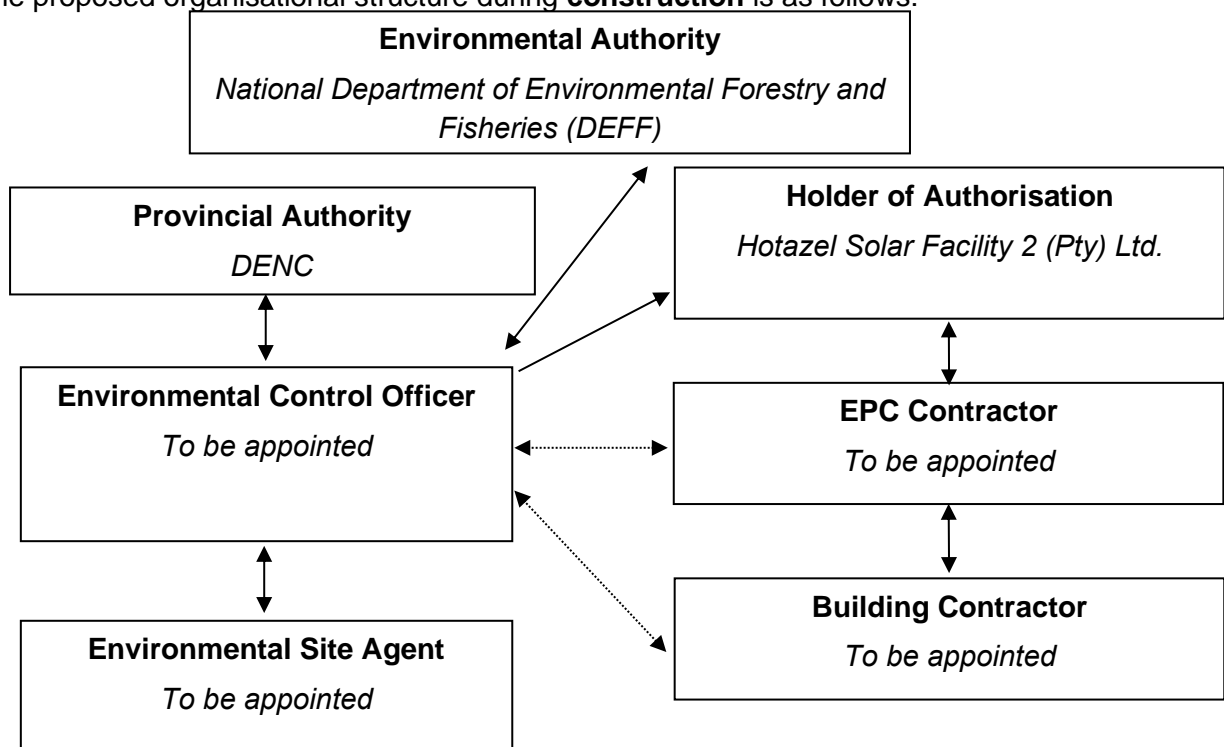


Figure 1: EMPr organisational structure during the construction phase

The proposed organisational structure during the **operation** of the facility is as follows:

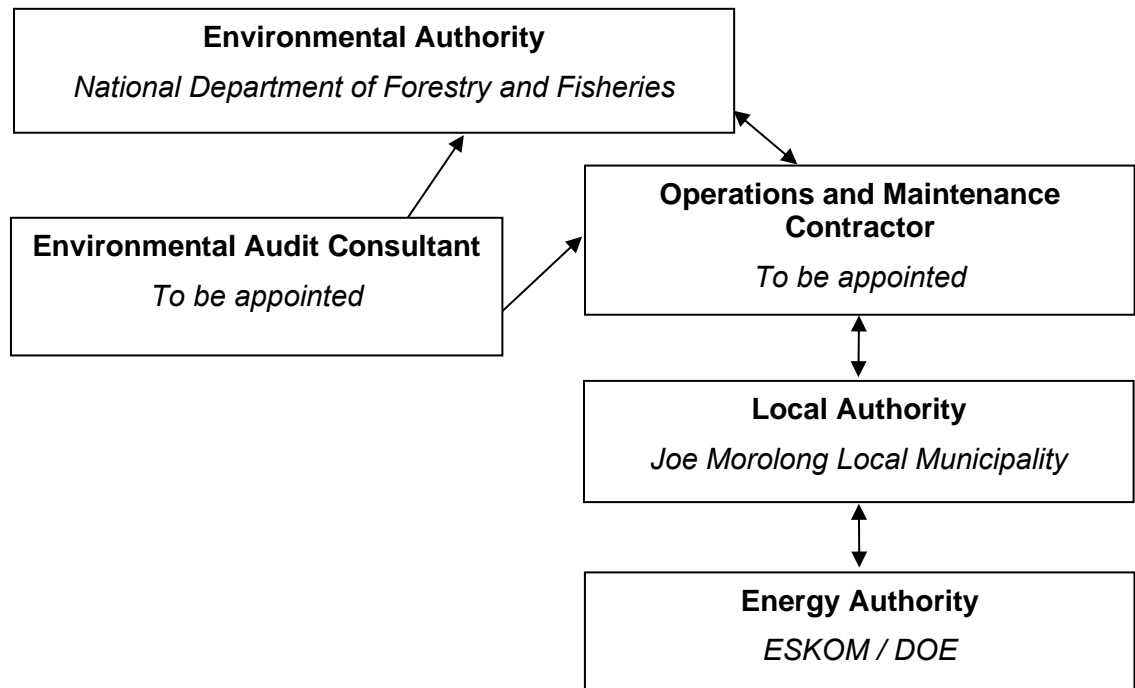


Figure 2: EMPr organisational structure during the operation phase.

This Organisational chart should be updated once the relevant parties are appointed in terms of this EMPr.

Details regarding the roles and responsibilities of the various parties in these organisational structures are included in Section 2 below.

1.4. Project Proposal

The proposal associated with this amendment includes the construction and operation of a BESS of up to 5ha within the authorised footprint of the facility.

The positioning of the BESS followed a risk adverse approach whereby the sensitive features identified by participating specialists were avoided when determining its position within the authorised project footprint.

1.5. Approach to the EMPr

This EMPr addresses the environmental management of the four key phases of the project, namely:

- The design and pre-construction phase;
- The construction phase;
- The operation phase; and
- The closure and decommissioning phase.

These four phases can generally be categorised as follows.

1.5.1 Pre-construction Phase

The pre-construction phase of the development refers to the final layout design considerations and the site preparation (fine-scale design and placement, survey of development site and associated infrastructure, demarcation of no-go areas, establishment of site camp and laydown area).

1.5.2 Construction Phase

The construction phase of the development refers to the vegetation and earthworks as well as the actual construction of the BESS.

1.5.3 Operation Phase

The operational phase commences once the facility starts providing power into the national grid (Contract Operational Date). There may be a stage where both construction and operation activities overlap i.e. occur on site at the same time. The operation phase includes the monitoring and maintenance activities required for the efficient functioning of the facility.

1.5.4 Closure and Decommissioning Phase

Closure and decommissioning refer to the decommissioning and recycling of the BESS at the end of their operational lifespan (after the period defined in the Power Purchase Agreement, or before).

2 ROLES AND RESPONSIBILITIES

Throughout the lifespan of this project, several individuals and entities will fulfil various roles and responsibilities to ensure the effective implementation of this EMPr. The key roles and responsibilities are detailed in the table below.

Table 2: Roles and responsibilities regarding the implementation of this EMPr.

Responsible Parties	Role and responsibilities
Environmental Authority – National Department of Forestry, Fisheries and the Environment.	<p><u>Role</u></p> <p>The National Department of Environment, Forestry and Fisheries is the competent / delegated authority responsible for compliance with the relevant environmental legislation, namely the National Environmental Management Act and other Specific Environmental Management Acts (SEMA's)</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> • Ensure overall compliance with the Environmental Authorisation (EA) & EMPr. • Review this document and any revisions thereof. • Undertake site audits at their discretion. • Review ECO Reports. • Review Audit Reports • Review Incident Reports. • Enforce legal mechanisms for contraventions of this EMPr and EA.
Holder of the Authorisation – Hotazel Solar Facility 2 (Pty) Ltd.	<p><u>Role</u></p> <p>The holder of the Authorisation is ultimately responsible and legally liable for ensuring compliance with all statutory requirements relating to the solar facility.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> • Ensuring compliance with the conditions set out in the Environmental Authorisation and the amendment thereto (BESS amendment) issued in terms of the NEMA, as well as those prescribed by other relevant legislation and guidelines. • Compliance with the requirements set out in this EMPr. • Ensuring all other permits, permissions and licences from all other statutory departments are in place. E.g.: Permit from provincial Department of Environmental Affairs & Nature Conservation (DEANC) to translocate or remove <i>protected</i> plants.
Environmental Control Officer (ECO) – To be appointed	<p><u>Role</u></p> <p>The ECO fulfils an advisory role to monitor, guide and report compliance with the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> • Revise, update and amend the EMPr if necessary and submit the amendments to the competent authority for consideration. • Ensure all relevant persons have a copy of the EMPr and any amendments thereof. • Advise the employer's representative on any additional environmental authorisations and permits that may be required. • Facilitate the Environmental Education / Induction Training with the contract staff. • Review and comment on Method Statements relevant to environmental management and make recommendations to the employer's representative. • Report any non-compliance with the EMPr or EA to the employer's representative and competent authority if necessary. • Undertake regular site inspections in compliance with this EMPr. • Monitor, audit and verify that all works comply with the EA and the EMPr. • Keep record of EMPr implementation, monitoring and audits, including a full photographic record of works.

	<ul style="list-style-type: none"> • Comply and submit regular Environmental Control Reports to the competent authority, as well as employer's representative and/ holder of the authorisation. • Report any environmental incidents or environmental impacts immediately to the employer's representative and the competent authority if necessary. • Report any environmental incidents or environmental impacts immediately to the employer's representative and the competent authority if necessary. • Assist the contractor and employer's representative planning for and implementing environmentally sensitive problem solving. • Advise the employer's representative on suggested "stop work" orders.
Environmental Site Agent (ESA) – To be appointed	<p><u>Role</u></p> <p>To assist the ECO with the day to day implementation and monitoring of the environmental management actions that are taking place on site. The EAS should also be independent of the EPC contractor</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> • Day to day environmental control of contractors on site during the construction phase. • Monitoring of construction management activities during the construction phase. • Weekly reporting to the ECO.
Employers Representative – To be appointed	<p><u>Role</u></p> <p>The Employer's representative role is likely to be fulfilled by the project engineer /project engineer and assumes overall delegated responsibility for compliance with this EMPr, the EA, the conditions of the Planning Approval, Conditions of the WULA and all applicable legislation for the duration of the construction phase.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> • Issue site instructions to the contractor based on the advice of the ECO. • Ensure that all detailed design incorporates the requirements of the EMPr and EA. • Ensure that the EMPr is included in all tender documents issued to prospective contractors and sub-contractors. • Ensure the EMPr is included in final contract documents. • Ensure that the Tenderers/Contractors adequately provide for compliance with the EMPr in their submissions. • Ensure that the EMPr is fully implemented by the relevant persons. • Ensure the contractor provides the necessary method statements. • Be accountable, to the competent authority for any contravention or non-compliance by the Contractor. • Assist the contractor with input from the ECO in finding environmentally responsible solutions to problems. • Undertake regular site audits, site visits and inspections to ensure that the requirements of the EMPr are implemented • Give instructions on any procedures and corrective actions on advice from the ECO. • Report environmental incidents or non-compliance with the EA or EMPr to the environmental authority. • Issue spot fines, penalties or 'stop-work' orders for contravention of the EMPr and give instructions regarding corrective action.
Landowner – P A C Jansen	<p><u>Role</u></p> <p>The landowner is responsible for compliance with legislation applicable to the management of the remainder of the property.</p> <p><u>Responsibilities</u></p> <p>E.g.: In terms of the National Veld & Forest Fires Act (101 of 1998) - an owner on whose land is subject to a risk of veldfire or whose land or part of it coincides with the border of the Republic, must prepare and maintain a firebreak on his or her land as close as possible to the border.</p>

3 LEGISLATIVE FRAMEWORK

The applicable legislation remains the same as what was considered in the Final Environmental Impact Assessment Report and EMPr for Hotazel 2 and as such it is not re-described in this Revised EMPr.

The table below lists the applicable legislation and describes whether any additional considerations are applicable to the amendment (i.e. that were not considered in the final EIR).

Table 3: Legislation applicable Hotazel 2 including any additional considerations applicable to the amendment of the EA to include the BESS.

Legislation	Additional considerations for Hotazel 2
NATIONAL LEGISLATION	
The Constitution of the Republic of South Africa	No additional considerations applicable to the amendment
National Environmental Management Act (NEMA)	This application is being undertaken in terms of this legislation. No additional activities listed in terms of this legislation are applicable to the Amendment.
National Environmental Management: Biodiversity (Act 10 of 2004)	The proposed positioning of the BESS within the authorised footprint remains on vegetation type classified as least concern in terms of this legislation (Kathu Bushveld). No additional impact or permitting requirements (TOPS permits) are applicable to this amendment.
Conservation of Agricultural Resources Act – CARA (Act 43 of 1983):	No additional considerations applicable to the amendment.
The Subdivision of Agricultural Land, Act 70 Of 1970	No additional considerations applicable to the amendment
National Water Act, No 36 of 1998	No additional considerations applicable to the amendment
National Forests Act (No. 84 of 1998):	No additional considerations applicable to the amendment
National Heritage Resources Act, 25 of 1998	SAHRA have approved the development footprint in terms of Section 38 of the National Heritage Resources Act. This authorised footprint remains unchanged and it is thus unlikely that further approval in terms of the NHRA will be applicable. SAHRA will however be given an opportunity to comment on this revised EMPr.
National Energy Act (No. 34 of 2008)	No additional considerations applicable to the amendment.
PROVINCIAL LEGISLATION	
Northern Cape Nature Conservation Act, No. 9 of 2009	No additional considerations applicable to the amendment
Nature and Environmental Conservation Ordinance, No 19 of 1974	No additional considerations applicable to the amendment
Astronomy Geographic Advantage Act, 2007 (Act No 21 Of 2007)	SARAO provided comment on the main facility. SARAO and SKAsa will be given an opportunity to provide additional comment on this proposed amendment.
Northern Cape Provincial Spatial Development Framework (PSDF) 2012	No additional considerations applicable to the amendment.
GUIDELINES, POLICIES AND AUTHORITATIVE REPORTS	
National Protected Area Expansion Strategy (NPAES) for S.A. 2008 (2010)	No additional considerations applicable to the amendment. The project footprint remains unchanged and thus outside of any protected area expansion focus areas.
Critical Biodiversity Areas	No additional considerations applicable to this amendment. The project footprint remains unchanged and thus still outside of any critical biodiversity areas.
White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)	No additional considerations applicable to the amendment
White Paper on the Energy Policy of the Republic of South Africa (1998)	No additional considerations applicable to the amendment
Integrated Energy Plan (IEP), 2015	No additional considerations applicable to the amendment.

Legislation	Additional considerations for Hotazel 2
Integrated Resource Plan for Electricity (2010-2030)	No additional considerations applicable to the amendment
National Development Plan 2030 (2012)	No additional considerations applicable to the amendment.
Strategic Infrastructure Projects (SIPs)	No additional considerations applicable to the amendment.
The Convention on the Conservation of Migratory Species of Wild Animals	No additional considerations applicable to the amendment.
Guidelines to minimise the impacts on birds of Solar Facilities and Associated Infrastructure in South Africa	No additional considerations applicable to the amendment. The monitoring regime remains the same as was assessed.
Environmental Impact Assessment Guideline for Renewable Energy Projects	No additional considerations applicable to the amendment.
Sustainability Imperative	No additional considerations applicable to the amendment.

Section 24N of NEMA deals with the Principles of Environmental Management, which are summarised in the Table below.

Table 4: Compliance with Section 24N of NEMA

EMPr Provision	Report Reference
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of planning & design.	This is addressed in Sections 4,
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of pre-construction and construction activities.	This is addressed in Sections 4.
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of the operation or undertaking the activity in question.	This is addressed in Sections 6
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of the rehabilitation of the environment.	This is addressed in Section 6 & 7 of this EMPr – It has also been dealt with under construction requirements for the specific reason that these works must take place during the construction phase.
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of closure, if applicable	This is dealt with in Section 7 of the EMPr.
Details and expertise of the person who prepared the EMPr.	These details are included at the beginning of the report (after cover page and report conditions).
A detailed description of the aspects of the activity that are covered by the EMPr.	This is dealt with under the introduction in Section 1, this EMPr.
Information identifying the persons who will be responsible for the implementation of the measures addressed in the EMPr.	This is dealt with in Section 2, of this EMPr.

EMPr Provision	Report Reference
Information in respect of mechanisms proposed for monitoring compliance with the EMPr and for reporting on the compliance.	This is dealt with in Section 8 of this EMPr.
Measures to rehabilitate the affected environment.	This is dealt with in Sections 5 & 6 of this EMPr as well as in appendix D-G.
Description of the manner in which pollution will be prevented and remedied.	This is dealt with throughout the EMPr, but specifically in Sections 5 & 7
The EMPr must furthermore, where appropriate;	
Set out time periods within which measures must be implemented.	This is dealt with throughout the EMPr and summarised in section 13.
Contain measures regulating responsibilities for any environmental damage.	This is dealt with is 14 of this EMPr.
Develop an environmental awareness plan describing the way the applicant intends to inform his or her Employees of any environmental risks and how to deal with these risks in order to avoid pollution or degradation of the environment.	This is dealt with in Sections 4.3 & 4.4 of the EMPr.

In addition to the above, the Holder of the Authorisation (in this case the holder of the amendment of the EA to incorporate BESS) is bound by “Duty of Care”, as described in Section 28 of NEMA (107 of 1998, as amended), which “...obliges every person who causes, has caused or may cause significant environmental degradation to take reasonable measures to prevent such degradation from occurring, continuing or recurring”. Thus, all mitigation measures recommended by the relevant authorities and specialists must be implemented to avoid occurrence, continuation or repeat of environmental degradation.

4 DESIGN & PRE-CONSTRUCTION PHASE

The following management considerations are to be adopted and implemented during the design and pre-construction phase of the BESS.

- A detailed technology specific risk assessment (for the selected equipment) must be developed to replace the generic risk assessment in Appendix D of this EMPr.
- All personnel who will be handling the BESS Units must receive appropriate training.
- All hardware needs to be sourced from reputable manufacturers.
- A standard operating procedure for delivery and handling of the BESS units must be developed and implemented.
- All BESS Units to be inspected prior to delivery to site.
- Development and implementation of Thermal Management Plan.
- Appropriate warnings and Standard Operating Procedure for emergency events must be developed and must be provided to the local emergency services and the applicable staff on site.
- Prior to commencement of the activity, a dedicated Battery Recycling Programme must be compiled and adopted.

All other pre-construction provisions as detailed in the main EMPr (Appendix B) must be adopted and implemented, these must include all the outcomes and actions summarised in section 12 of the main facility’s EMPr.

5 CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT

The items contained in this section of the EMPr must be implemented during the construction phase of the development of the Hotazel 2 BESS.

5.1 Water Supply

OUTCOME: To ensure water used during construction of the BESS is lawfully and sustainably utilised.

The contractor must ensure a supply of water is available on site for sanitation, drinking, and dust suppression during the construction of the BESS.

Water used for dust suppression on gravel roads must be of a quality compliant with the General Special Effluent Standards (31/03/2009): Temperature: max.25⁰C, pH: between 5.5 and 7.5 and conductivity: not be increased more than 15% above the intake water and not exceed 250 milli-Siemens per metre (determined at 25⁰C). The water used for dust suppression is likely to be borehole water / municipal water, and not treated effluent. This item is specific to water supply during the construction phase.

5.2 Topsoil Handling

OUTCOME: To ensure that the handling of topsoil does not result in the pollution or loss of the resource.

In terms of best practice and for rehabilitation purposes, it is essential that a 150mm layer of topsoil from the affected BESS footprint be stripped and stockpiled prior to the commencement of construction activities in each area.

Topsoil is of utmost importance for use in rehabilitation of disturbed areas and should therefore under no circumstances be mixed with sub-soils. Since the panels are to be installed using low impact pile installation, topsoil from underneath the panel arrays must be left in situ.

The following actions regarding topsoil handling must be considered:

- A minimum 300mm layer of topsoil or in shallow surface areas, up to bedrock level must be stripped from BESS Footprint (i.e. within the BESS perimeter fence);
- The topsoil stockpile site must be approved by the ECO and may not be within the sensitive areas as defined by the participating specialists;
- The topsoil stockpile must be within the approved footprint of the total development;
- The topsoil may not be stockpiled within any of the remaining natural areas. An existing disturbed area should rather be chosen for this purpose;
- The topsoil stockpile must be protected from erosion and dust as indicated by the ECO and this EMPr;
- The topsoil must be replaced into disturbed areas. It is important to note that rehabilitation in the BESS area will be extremely limited, so topsoil stripped from this area can be used for rehabilitation on the remainder of the PV Plant;
- The topsoil stockpile mustn't be deeper than 1m;
- A minimum buffer area of 20m should be around the topsoil stockpile in which no work may take place;

- The topsoil stockpile must be barricaded to inhibit unwanted vehicle movement around it and
- Topsoil must be moved once when stockpiling and back to disturbed areas during rehabilitation, no double handling.

5.3 Transport & Traffic Management

OUTCOME: To ensure that delivery of BESS equipment to site does not generate unacceptable traffic impacts.

The Transport Study and Traffic Management plan in section 7 (pg 36) of the main facility EMP (Appendix B) must be adopted and implemented.

5.4 Concrete Management

OUTCOME: To ensure that the handling of concrete does not result in pollution of soil or water resources.

Proper concrete management is of utmost importance. Concrete works are likely to be quite extensive within the BESS footprint (but limited for the remainder of the development).

Cement powder has a high alkaline pH that may contaminate and adversely affect both soil pH and water pH negatively. A rapid change in pH can have consequences on the functioning of soil and water organisms, as well as on the botanical component.

The use of ready-mix trucks delivering concrete directly to site is recommended. Mass batching of concrete on site should be limited as far as possible.

The following actions must be implemented regarding the delivery of concrete to site:

- Trucks should deliver pre-mixed concrete to the site and pour the concrete directly into the prepared excavations (i.e. the foundations of the BESS).
- When concrete trucks have unloaded, there is a requirement to wash out the inside of the concrete drum. Water can be provided to the trucks for this purpose (at the discretion of the contractor). Concrete suppliers may **NOT** dispose of this wash water anywhere on site. Trucks should return to their depot for this purpose; and
- Any spillages of concrete outside of the excavations (including haulage routes) must be cleaned up immediately by the supplier.

5.5 Cable Trenches

OUTCOME: To ensure that trenching activities between the BESS and the Substation / PV field are restricted and do not result in loss of topsoil resources.

All AC cabling should run parallel to the BESS Access road as far as possible. There will also be limited trenching associated with the DC cabling.

Cable trench excavation, cable laying and backfill must be carried out in a systematic and continuous operation, **minimising the length of trench open at any one time** in order to reduce the risk of runoff. Cable trenches must be backfilled in such a manner as to prevent

the trench from acting as a ditch or a conduit for water flow. In this regard, cable trenches should follow the contours of the land as far as possible.

The following actions must be implemented by the contractor:

- Trenching shall be kept to a minimum through the use of single trenches for multiple service provision (including communication cabling and AC cabling in the same trenches);
- The planning and selection should be done in approximation to the SDP and cognisance shall be given to minimising the potential for soil erosion;
- Trench routes with permitted working areas shall be clearly defined and marked with prior to excavation;
- The stripping and separation of topsoil and subsoil shall occur as stipulated by the Engineer's Representative (ER). Soil shall be stockpiled for use as backfilling as directed by the ER with input from the ECO;
- Trench lengths shall be kept as short as practically possible before backfilling and compacting;
- Trenches shall be backfilled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion. Excess soil shall be stockpiled in an area approved by the ER with input from the ECO;
- Stockpiled topsoil must be replaced at the top of excavated trenches (except where these fall within an area to be hard surfaced); and
- Open trenches must be inspected daily for faunal entrapment (small mammals and reptiles). These are to be removed before backfilling of the trenches.
- Topsoil may not be used for bedding or blanket material in trenches. Bedding and Blanket Material must be obtained from a commercial source.

5.6 Management of archaeological resources

OUTCOME: To ensure that works within the BESS area do not result in significant loss of archaeological resources.

Should any archaeological and/or paleontological remains, including (but not limited to) fossil bones, fossil shells, coins, indigenous ceramics, colonial ceramics, marine shell heaps, stone artefacts, bone remains, rock art, rock engravings and any antiquity be discovered during construction, the ECO should safeguard these (preferably *in situ*) and report the find immediately to the South African Heritage Resources Council (SAHRA) and the Northern Cape Heritage Resources Authority (NCHRA), so that they are not disturbed further until the necessary guidance and approval have been obtained and the appropriate action (e.g. recording, sampling or collection) can be taken by a professional archaeologist or palaeontologist.

5.7 Noise Management

OUTCOME: To ensure nuisance from noise and vibration does not occur.

Although the proposed development is located outside of an urban area, the following noise management actions are applicable to the construction phase of the BESS due to its proximity to agricultural activities.

- It is recommended that noise generation be kept to a minimum and that construction activities be confined to normal working hours (08:00 - 17:00 on workdays). Should the Contractor / Engineer wish to deviate from these work hours, this must be discussed during the Pre-Construction / Initial Environmental Compliance Workshop with the ECO and recorded in the necessary Method Statements;
- Provide baffle and noise screens on noisy machines as necessary;
- Provide absorptive linings to the interior of engine compartments;
- Ensure machinery is properly maintained (fasten loose panels, replace defective silencers);
- Switch off machinery immediately when not in use; and
- Reduce impact noise by careful handling.

The Contractor shall be responsible for compliance with the relevant legislation with respect to noise *inter alia* Section 25 of ECA (73 of 1989) and standards applicable to noise nuisances in the Occupational Health and Safety Act (No. 85 of 1993).

5.8 Dust Control & Management

OUTCOME: To ensure there is no health risk or loss of amenity due to emission of dust to the environment, as a result of the construction of the BESS.

Every effort to minimize dust pollution on the site must be undertaken. The contractor must implement the following measures with regards to the management of dust on site:

The following actions are required in this regard.

- Construction vehicles must adhere to speed limits and minimization of haul roads must be implemented;
- During dry, dusty periods haul roads should be kept dampened to prevent excess dust. No potable water may be used for damping haul roads;
- All vehicles used to deliver or remove loose material (sand, soil, gravel etc.) to and from site must be covered with a 60% shade cloth to avoid dust blowing from the vehicle.
- As an alternative, products such as Road Environment Dust Suppressants (REDS) would be recommended in order to minimize the use of water to control dust pollution. This is to be determined by the ECO during construction as required;
- Exposed stockpile materials must be adequately protected against wind (covered) and should be sited in consideration of the prevailing wind conditions;
- Dust nuisances shall comply with the applicable standards according to the Occupational Health and Safety (Act No. 85 of 1993). The contractor shall be solely responsible for the control of dust arising from the contractor's operations and for any costs against the Employer for damages resulting from dust;
- The contractor shall take all reasonable measures to minimise the generation of dust as a result of construction activities to the satisfaction of the ER;
- Removal of vegetation shall be avoided until such time as soil stripping is required and similarly exposed surfaces shall be re-vegetated or stabilised as soon as is practically possible;
- Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present;

- During high wind conditions the site manager, with input from the ECO, must evaluate the situation and make recommendations as to whether dust damping measures are adequate, or whether work should cease altogether until the wind speed drops to an acceptable level;
- Where possible, soil stockpiles shall be in sheltered areas where they are not exposed to the erosive effects of the wind. Where erosion of stockpiles becomes a problem, erosion control measures shall be implemented at the discretion of the site manager.
- Vehicle speeds shall not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated and non-vegetated areas.
- Should water be used for dust suppression on the BESS access road or platform, it must be of a quality compliant with the General Special Effluent Standards (31/03/2009): Temperature: max.25⁰C, pH: between 5.5 and 7.5 and conductivity: not be increased more than 15% above the intake water and not exceed 250 milli-Siemens per metre (determined at 25⁰C). The water used for dust suppression must be sourced from a licenced resource.
- Dust monitoring must be done 2 months prior to construction to get a baseline and continue during construction.

5.9 Security Fencing

OUTCOME: To ensure that fencing protects project assets while limiting impact on faunal passages.

As the BESS is completely contained within the total perimeter of the facility, the additional fences surrounding the BESS footprint do not have to comply with the faunal requirements relating to the height of electrified strands as detailed in the Project EMPr (Appendix B).

5.10 Blasting

OUTCOME: To ensure any unlikely blasting activities do not disturb sensitive environmental nor social features.

It is unlikely that blasting will be required. Should blasting be required for construction of the BESS foundations or AC trenching, the following actions must be implemented:

- No blasting may take place within 50m of a borehole without approval of a suitably qualified engineering geologist;
- A current and valid authorisation shall be obtained from the relevant authorities and copied to the ER prior to any blasting activity;
- A method statement shall be required for any blasting related activities;
- All laws and regulations applicable to blasting activities shall be adhered to at all times;
- A qualified and registered blaster shall supervise all blasting and rock splitting operations at all times;
- The contractor shall ensure that appropriate pre-blast monitoring records are in place (i.e. photographic and inspection records of structures in close proximity to the blast area);
- The contractor shall allow for good quality vibration monitoring equipment and record keeping on site at all times during blasting operations;
- The contractor shall ensure that emergency services are notified, in writing, a minimum of 24 hours prior to any blasting activities commencing on site;

- The contractor shall take necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly-rock. Environmental damage caused by blasting / drilling shall be repaired at the contractor's expense to the satisfaction of the ER and the ECO;
- The contractor shall ensure that adequate warning is provided immediately prior to all blasting. All signals shall also be clearly given;
- The contractor shall use blast mats for cover material during blasting. Topsoil may not be used as blast cover;
- During demolition, the contractor shall ensure, where possible, that trees in the area are not damaged;
- Appropriate blast shaping techniques shall be employed to aid in the landscaping of blast areas, and a method statement to be approved by the ER, shall be required in this regard; and
- At least one week prior to blasting, the relevant occupants/owners of surrounding land shall be notified by the contractor and any concerns addressed.

5.11 Stormwater, Wash water and Erosion Management

OUTCOME: To ensure that stormwater and wash water do not cause erosion or pollution of the receiving environment.

The Stormwater, Erosion and Wash water Management Plan that formed part of the original Environmental Process must be adopted and implemented by the holder of the EA amendment. The following key actions are required:

- To limit soil erosion, construction activities (more specifically clearing of land) should be limited to the dry season (May to October) as far as possible.
- Construction activities should be limited to areas outside of the 1:100-year flood line.
- Upstream and downstream berms, for each construction site, should be implemented during the pre-construction and construction phases of the project. Upstream diversions will ensure limited surface flows through construction areas. Downstream berms will ensure that sediments eroded from within the construction site will be trapped, therefore reducing the impact to the downstream receiving environment. It is recommended that the berms are constructed out of a non-erodible material, such as sandbags with plastic liners.
- Materials excavated during the construction phase should be deposited in areas outside of drainage lines and stormwater channels. This will ensure minimal contact between concentrated stormwater runoff and the excavated materials.
- Machinery used during the construction process should be regularly (at least daily) checked for oil leaks. During periods where the machinery is not in use, drip trays should be placed under the machinery to contain any spillages.
- Fuels and hydrocarbon stores used during the construction phase should be lined and bunded such that spills from the store areas will not enter the receiving environment.
- Clearing of vegetation for construction purposes must be undertaken in accordance with a method statement. The method statement must include the method of clearing, recovery of and disposal of vegetation.

- Any pollution of land or watercourses that may occur in the unlikely event of BESS unit failure must be cleaned up by a qualified service provider and rehabilitated to its original state.

5.12 Fire Management and Protection

OUTCOME: To reduce the risk of fire to infrastructure and environment.

A BESS thermal / fire management plan and risk assessment must be developed prior to commencement of construction. These plans must be specific to the specific technology service providers and will be for the purpose of preventing equipment and environmental damage as a result of equipment fires.

As far as wildfires are concerned, the solar development site is arid, with sparse vegetation cover, and fires are not a natural phenomenon in the area. However, under exceptional circumstances, such as following years of very high rainfall, sufficient biomass may build up to carry fires. Therefore, management of plant biomass in areas surrounding the BESS will be required. Utilisation of non-selective herbicides for the management of biomass is prohibited on site.

The following general actions (specific BESS actions to be included in the management plan referred to above) must however be considered with regards to fire protection on site:

- No fires for cooking or heating should be allowed within the perimeter of the BESS;
- **No fuelwood collection** should be allowed on-site;
- The **total removal of all invasive alien vegetation** should take place on the entire project site in order to decrease the fire risk – Although there were few invasive plants identified during the environmental process, these may establish to a degree as a result of site disturbance;
- Cigarette butts may not be thrown in the veld but must be disposed of correctly. The contractor, with input from the ECO, must **designate smoking areas** (in compliance with the Tobacco Products Control Amendment Act 63 of 2008) with suitable receptacles for disposal;
- In case of an emergency, the **contact details of the local fire and emergency services** must be readily available;
- Emergency personal must be appropriately trained on how to deal with a fire as a result of the BESS;
- Contractors must ensure that **appropriate firefighting equipment and suitably qualified/experienced personal** are available on site at all times, as per the specifications defined by the health and safety representative / consultant;
- The fire risk on site is a point of discussion that must take place as part of the pre-construction compliance workshop and the environmental induction training prior to commencement of construction;
- The contractor must also comply with the requirements of the Occupational Health and Safety Act with regards to fire protection; and
- A standard operating procedure for both BESS and wildfires must be developed prior to construction of these facilities.

5.13 Sanitation during Construction

OUTCOME: To ensure safe and healthy sanitation for construction staff without increasing pollution risk.

Portable chemical ablution facilities must be made available for the use by construction staff for the duration of the construction period. The following actions must be implemented in this regard:

- Toilet and washing facilities must be available to the site personnel at all times;
- These facilities must be situated within the site camp and away from any washes or drainage lines;
- One toilet for every 15 personnel is required;
- The facilities must be serviced on a regular basis to prevent any overflow or spillage;
- The servicing contractor must dispose of the waste in an approved manner (e.g. via the municipal wastewater treatment system);
- The ECO must be provided with the service providers' details and the service schedule for the site;
- The toilets should be secured to ensure that they do not blow over in windy conditions;
- All toilet facilities must be removed from site on completion of the contract period; and
- Should the construction period be interrupted by a builder's break, the toilets should be emptied prior to the break.

Sanitation during operation is discussed above under the design criteria in Section 4.7.

5.14 Fuel Storage

OUTCOME: To ensure lawful fuel storage that does not cause soil and water pollution.

Fuel storage may not take place within the BESS footprint, but rather at the nearby Site Camp / Laydown area. The following actions must be implemented with regards to fuel storage:

- Temporary fuel storage must take place within the contractors site camp in an area approved by the ECO;
- No storage of fuel may take place on any other portion of the site;
- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up immediately in the appropriate manner, as related to the nature of the spill;
- Mobile fuel units used to refuel plant on site must make use of drip trays when refuelling;
- Storage facilities may not be located within 60m of the on-site drainage lines or where there is a potential for any spilled fuel to enter a watercourse or groundwater;
- Fuel storage facilities should be located on flat ground. No cut and fill should take place immediately on or adjacent to fuel storage areas;
- All storage tanks should be double lined and be ISO 9001 certified;
- All storage tanks must be enclosed by bund walls;
- Bund walls must be constructed to contain at least 110% of the total capacity of the storage tanks;
- Bund walls must be constructed of impermeable material or lined to ensure that petroleum products cannot escape;

- In the event that the bunded area is a pit that is dug and lined with plastic, adjustments must be made to allow for invertebrates to escape as the plastic doesn't provide any traction and become pitfall traps.
- A suitable material should be placed in the base of the bund walls to soak up any accidental spillages;
- The tanks should be locked and secured when not in use;
- Automatic shut-off nozzles are required on all dispensing units;
- Storage tanks should be drained within one week of completion of activities (only unused fuel can be used by the contractor on other work sites or returned to the supplier). If the construction program extends over the builder's shutdown, the contractor must ensure that storage tanks are emptied prior to this period;
- All storage tanks, containers and related equipment should be regularly maintained to ensure safe storage and dispensing of material. The Engineer is to sign off on the condition and integrity of the storage tanks;
- Defective hoses, valves and containment structures should be promptly repaired;
- Vehicle and equipment fuelling should be undertaken on a hard-impermeable surface, over drip pans or bund walls to ensure spilled fuel or toxic liquids are captured and cleaned up;
- The area must be totally rehabilitated on completion of the contract and all contaminated material must be carefully removed and disposed of at a licensed dumping site for that purpose; and
- Spill kits must be made available on-site for the clean-up of spills.
- Should the BESS include Inverters/transformers that are not contained within the bunded battery containers, these must also be bunded to 110% of their capacity

5.15 Construction Waste Management

OUTCOME: To ensure the management of waste is both lawful and sustainable.

5.15.1 Litter management

Wind and scavenger proof bins must be installed within the BESS footprint and must be emptied on a weekly basis.

5.15.2 Construction Rubble and Waste

All construction rubble must be disposed of at an approved site established and registered for this purpose (no construction rubble may be spoiled anywhere on site). A list must be compiled before construction of any existing building rubble on site to avoid disputes. NO construction rubble may be used as fill in landscaping or any other areas on site.

5.15.3 Scrap Metal

Recycling of scrap metal is recommended. Scrap metal must be disposed of off-site at suitable facilities (e.g. municipal dump registered for this purpose).

5.15.4 Hazardous Waste

All hazardous waste (including chemicals, bitumen, fuel, lubricants, oils, paints etc.) shall be disposed of at an approved / registered hazardous-waste landfill site. The Contractor shall provide disposal certificates to the ECO.

Used oil and grease must be removed from site to an approved used oil recycling company.

Under NO circumstances may any hazardous waste be spoiled on the site.

Major services and maintenance of construction and delivery vehicles should take place off-site.

Washing of construction and personal vehicles are strictly prohibited on site unless it is done on an impermeable surface that flows into an evaporation pit. The contents of the pit will then be carted off site at the end of the project.

Damaged BESS units are considered hazardous and may be considered a waste product. Any damaged units must be removed from site by the original equipment manufacturer or a designated service provider. No repair to damaged units may take place on site.

5.16 Theft and Other Crime

OUTCOME: To ensure that activities on site do not increase the criminal activity of the area.

An increase in crime during the construction phase is often a concern. In the case of the proposed development, this is likely to be negligible due to the extremely remote nature of the site. Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the developer and the contractor. Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a **jobsite security plan** prior to commencement of construction. This jobsite security plan should consider protection of the construction site from both internal and external crime elements, as well as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant. A copy of the jobsite **security plan should be included in the first environmental control report to be submitted to the competent authority.**

It is likely that the Contractor's Site Camp PV Footprint and the PV Laydown area/s will be fenced with a temporary fence to avoid theft during construction. The BESS area will however be fenced off by a permanent fence.

Additional security measures during construction could include cctv camera surveillance and security guards.

The following actions are relevant in this regard (refer to Section 5.9 above for details of the facility permanent fencing):

- All portable construction equipment and material must be locked away within the Contractor's Site Camp overnight and during holiday periods;
- Fuel storage tanks must be locked when not in use;
- All unassembled / un-installed PV materials must be locked within the fenced Laydown areas overnight and during holiday periods; and
- The minimum amount of lighting should be used at night and this should be of the low-UV emitting kind that attracts less insects.

It must be noted the **collection, hunting or harvesting of any plants or animals** at the site is **strictly forbidden**, and thus any person found undertaking any of these actions will be considered guilty of committing a crime. Any incidents of such crimes on nature must be reported to the ECO immediately.

5.17 Plant Rescue and Protection.

OUTCOME: To reduce the impact on protected and sensitive botanical features.

The following environmental management actions applicable to the construction phase of the BESS are applicable.

5.17.1 Identification of species of conservation concern

The ToPS (Threatened and Protected Species) regulations provide for the regulation of activities which may directly or indirectly impact threatened and protected species. Such species are identified under NEMBA as well as by the National Red Data List of Plants. At a provincial level, the Northern Cape Nature Conservation Act (2009) also provides lists of species which are protected within the province. Species listed under the National Red Data List of Plants as well as those protected under the provincial legislation must be specified on permit applications required for site clearing.

A permit application must be made for any of these species within the BESS footprint and any requirements of this permit once issued must be complied with.

5.17.2 Mitigation & avoidance options

Where listed plant species fall within the BESS footprint it is unlikely that avoidance will be possible. In this case, translocation of these should take place. However, not all species are suitable for translocation as only certain types of plants are able to survive the disturbance. Suitable candidates for translocation include most geophytes and succulents. Although there are exceptions, many woody species do not survive translocation well and it is generally not recommended to try and attempt to translocate such species.

5.18 Vegetation Clearing

OUTCOME: To ensure that vegetation is minimised and restricted to the development footprint.

It is unlikely that any vegetation will be left within the footprint of the BESS. Vegetation cleared within the footprint of the BESS must be stockpiled for use in the rehabilitation of the remainder of the site.

5.19 Animal Rescue & Protection

OUTCOME: To reduce the direct impact on animals affected by the construction activities.

Any animals (including snakes, tortoises and lizards) directly threatened by the clearing or construction activities should be removed to a safe location outside of the construction area by the ECO or other suitably qualified/experienced person.

All trenches and open excavations should be inspected daily (first thing in the morning) for any trapped fauna (particularly small mammals and reptiles). These should be removed to a safe location outside of the construction area by the ECO or other suitably qualified / experienced person.

5.20 Re-Vegetation & Habitat Restoration

OUTCOME: To restore habitat disturbed during construction activities.

As the BESS footprint will not include any undeveloped habitat, no revegetation actions will be required.

Any temporary laydown utilised for the BESS must be rehabilitated back to a natural state.

5.21 Alien Plant Management Plan

OUTCOME: To manage alien species in compliance with the AIS regulations.

The Hotazel 2 site is currently very lightly invaded by alien species. The density of alien species within the intact vegetation is generally very low and is restricted to disturbed areas around watering points. The total removal of all AIS must take place on the entire BESS footprint.

Although it is usually preferable to use manual clearing methods where possible, such methods may create additional disturbance which stimulates alien invasion and may also be ineffective for many woody species which resprout. Where herbicides are to be used, the impact of the operation on the natural environment should be minimised by observing the following:

- Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control.
- All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
- Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of in a suitable site.
- To avoid damage to indigenous or other desirable vegetation, products should be selected that will have the least effect on non-target vegetation.
- Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation.
- The appropriate health and safety procedures should also be followed regarding the storage, handling and disposal of herbicides.

5.22 Open Space Management

OUTCOME: To manage the undeveloped portions of the footprint to promote ecological diversity.

No open space will remain within the footprint of the BESS and as such, no additional actions for the BESS will be required.

6 OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT

The following environmental requirements are to be adopted and implemented during the operation phase of the BESS

6.1 End of Life Recycling of Battery Components

OUTCOME: To ensure that Battery components that have reached their end of life do not cause environmental degradation as a result of their disposal.

A dedicated battery recycling plan must be developed and implemented for the project. No battery components may be disposed of on site or at any landfill.

Units should ideally be sent back to the original equipment manufacturers in compliance with the battery recycling plan.

6.2 Management of Emergency Incidents

OUTCOME: To ensure that in the unlikely event of failure of any of BESS units, such failure does not result in environmental degradation or pollution.

The actions detailed in the detailed risk assessment, once compiled by the original equipment manufacturers must be implemented in this regard.

7 CLOSURE & DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT

After the lifespan of the facility (20-25 years), there is a possibility that the entire facility, including the BESS, will be decommissioned, and closed (although other options for continuation may be investigated).

Appendix 5 of Regulation 982 of the 2014 EIA Regulations contains the required contents of a Closure Plan. The table below shows the minimum requirements for a closure plan. The operating entity for this facility must ensure that the closure plan complies with these requirements as well as any other legislative requirements that may come into effect during the lifecycle of the project.

Table 5: Legislative requirements for a closure plan

Requirement
(1) A closure plan must include -
(a) Details of - <ul style="list-style-type: none"> (i) The EAP who prepared the closure plan; and (ii) The expertise of that EAP.
(b) Closure objectives.
(c) Proposed mechanisms for monitoring compliance with and performance assessment against the closure plan and reporting thereon.
(d) Measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development including a handover report, where applicable.

Requirement	
(e)	Information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity.
(f)	A description of the way it intends to – <ol style="list-style-type: none"> (i) Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure; (ii) Remedy the cause of pollution or degradation and migration of pollutants during closure. (iii) Comply with any prescribed environmental management standards or practises; or (iv) Comply with any applicable provisions of the Act regarding closure.
(g)	Time periods within which the measure contemplated in the closure plan must be implemented.
(h)	The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of closure.
(i)	Details of all public participation processes conducted in terms of regulation 41 of the Regulation, including – <ol style="list-style-type: none"> (i) Copies of any representations and comments received from registered interested and affected parties; (ii) A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; (iii) The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants; (iv) Where applicable, an indication of the amendments made to the plan as a result of public participation processes conduction in terms of regulation 41 of these Regulations.
(j)	Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts.

Within a period of at least 12 months prior to the planned closure and decommissioning of the site, a Closure Plan must be prepared and submitted to the Local Planning Authority as well as the Provincial and National Environmental Authorities (the Northern Cape Department of Environmental Affairs & Nature Conservation (DEANC) and the Department of Environment Forestry and Fisheries (DEFF)) for input and approval. This plan must provide detail pertaining to the recycling and disposal of BESS components, site restoration, soil replacement, landscaping, pro-active conservation, and a timeframe for implementation. Furthermore, the plan must comply with any additional legislation and guidelines that may be applicable at the time.

8 MONITORING AND AUDITING

Environmental monitoring and audits are fundamental in ensuring the implementation of the management actions contained within this EMPr, environmentally sustainable development and maintenance of the PV facility, including the BESS.

To promote transparency and cooperative governance, the results of relevant audits should be submitted to:

- The operators of the facility;
- The local authority;

- The provincial environmental authority: Department of Environmental Affairs & Nature Conservation (DENC);
- The national environmental authority: Department of Forestry, Fisheries and the Environment (DFFE); and
- Eskom.

The results of the audit must be recorded in an environmental audit report and any non-compliance must be formally recorded, along with the response-action required or undertaken. Each non-compliance incident report must be issued to the relevant person(s), so that the appropriate corrective and preventative action is taken within an agreed upon timeframe.

Appendix 7 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Audit Report. The table below shows the legislated requirements of an audit reports, and all relevant environmental audits undertaken as part of this development (during construction and operation) should comply with these requirements.

Table 6: Legislative requirements for an Audit report.

(1) An Environmental audit report prepared in terms of these Regulations must contain:
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.
(b)Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.
(c) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.
(d) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.
(e) A description of the methodology adopted in preparing the environmental audit report.
(f) An indication of the ability of the EMPr, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan.
(g) A description of any assumptions made, and any uncertainties or gaps in knowledge.
(h) A description of a consultation process that was undertaken during the course of carrying out the environmental audit report.
(i) A summary and copies of any comments that were received during any consultation process
(j) Any other information requested by the competent authority.

8.1 ECO Construction Monitoring

The ECO is responsible for environmental monitoring during construction as per the requirements of this EMPr. The monthly environmental monitoring reports compiled by the ECO, as well as the photographic record of works, must be submitted to the operators of the facility, the local authority, the provincial environmental authority, the national environmental authority and Eskom.

8.2 Recording and Reporting to the DEFF.

The following recording and reporting requirements are required:

- The holder of the authorisation must keep all records relating to monitoring and auditing on site and make it available for inspection to any relevant and competent authority in respect of this development.

All documentation e.g. Audit/monitoring/compliance reports and notifications required to be submitted to the department in terms of the EA, must be submitted to the Director: Compliance monitoring.

8.3 Environmental Audit Report

The holder of the EA must submit an environmental audit report to the department within 30 days of completion of the construction phase (i.e. within 30 Days of site handover) and within 30 days of completion of rehabilitation activities.

This environmental audit report must:

- Be compiled an independent environmental auditor;
- Indicate the date of the audit, the name of the auditor and the outcome of the audit;
- Evaluate compliance with the requirements of the approved EMPr and the Environmental Authorisation;
- Include measures to be implemented to attend to any non-compliances or degradation noted;
- Include copies of approvals granted by other authorities relevant to the development for the reporting period;
- Highlight any outstanding environmental issues that must be addressed, along with recommendations for ensuring these issues are appropriately addressed;
- Include a copy of the EA and the approved EMPr;
- Include all documentation such as waste disposal certificates, hazardous waste landfill site licences etc, pertaining to this authorisation; and
- Include evidence of adherence to the conditions of this authorisation and the EMPr where relevant such as training records and attendance registers.

9 METHOD STATEMENTS

Method statements are written submissions by the Contractor to the Engineer and ECO in response to the requirements of this EMPr or in response to a request by the Engineer or

ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects.

The Contractor shall not commence the activity for which a method statement is required until the Engineer and ECO have approved the relevant method statement.

Method statements must be submitted at least five (5) working days prior to the proposed date of commencement of the activity. Failure to submit a method statement may result in suspension of the activity concerned until such time as a method statement has been submitted and approved.

An approved method statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. However, **any damage caused to the environment through activities undertaken without an approved method statement shall be rehabilitated at the contractor's cost.**

Additional method statements can be requested at the ECO's discretion at any time during the construction phase.

The method statements should include relevant details, such as:

- Construction procedures and location on the construction site;
- Start date and duration of the specific construction procedure;
- Materials, equipment and labour to be used;
- How materials, equipment and labour would be moved to and from the development site, as well as on site during construction;
- Storage, removal and subsequent handling of all materials, excess materials and waste materials;
- Emergency procedures in case of any potential accident / incident which could occur during the procedure; and
- Compliance / non-compliance with an EMP specification and motivation for proposed non-compliance.

9.1 Method Statements Required

Based on the specifications in this EMP, the following method statements are likely to be required as a minimum (more method statements may be requested at any time as required under the direction of the ECO):

- Vegetation clearing and topsoil stripping, and associated stockpiling;
- Hazardous substances declaration of use, handling and storage – e.g. for fuels, chemicals, oils and any other harmful / toxic / hazardous materials;
- Battery Recycling Plan;
- Standard Operating for BESS systems;
- Cement and concrete batching;
- Traffic, transport & delivery accommodation;
- Solid waste management / control procedures;
- Stormwater and wastewater management / control systems;
- Erosion remediation and stabilisation;
- Fire control and emergency procedures; and

- Job site security plan.

10 HEALTH AND SAFETY

The Occupational Health and Safety Act (No. 85 of 1993) aims to provide for / ensure the health and safety of persons at work or in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.

The main Contractor must ensure compliance with the Occupational Health and Safety Act, as well as that all subcontractors comply with the Occupational Health and Safety Act.

The following is of key importance (Section 8 of the aforesaid Act):

General duties of employers to their employees

- (1) Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.*
- (2) Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular-*
 - (a) the provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable, are safe and without risks to health;*
 - (b) taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety or health of employees, before resorting to personal protective equipment;*
 - (c) making arrangements for ensuring, as far as is reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage or transport of articles or substances;*
 - (d) establishing, as far as is reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as is reasonably practicable, further establish what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;*
 - (e) providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees;*
 - (f) as far as is reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures contemplated in paragraphs (b) and (d), or any other precautionary measures which may be prescribed, have been taken;*
 - (g) taking all necessary measures to ensure that tire requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used;*

- (h) enforcing such measures as may be necessary in the interest of health and safety;*
- (i) ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented; and*
- (j) causing all employees to be informed regarding the scope of their authority as contemplated in section 37 (1) (b).*

11 CONTRACTORS CODE OF CONDUCT

The Contractor's Code of Conduct is a document to be drawn up by the solar facility Developer and provided to all contractors or subcontractors that undertake any service on site. This code of conduct should include generic conduct rules for construction and operation activities on the PV facility and must be signed by all contractors. **This code of conduct does not exonerate contractors from complying with this EMPr or the EMPr for the overall facility and must not be viewed as a stand-alone document.**

The following general template is suggested for this Code of Conduct document and must be adapted and updated to include the provisions of this EMPr, recommendations of participating specialists, conditions of approval of the Environmental Authorisation, conditions imposed by the Local Authority (as part of the rezoning and consent use), as well as the all service agreements.

11.1 Objectives

To ensure compliance with the Conditions of the Environmental Authorisation, the Environmental Management Programme (EMPr), recommendations of participating specialists, conditions imposed by the Local Authority as part of the rezoning and subdivision, as well as the service agreements.

- To ensure the least possible damage to:
 - Existing infrastructure on and adjacent to the site;
 - Indigenous flora and fauna (biophysical environment); and
 - Water quality of surface and groundwater on and surrounding the site. Particularly the water quality entering and exiting the on-site washes/minor drainage lines;
- Construction and development are undertaken with due consideration to all environmental factors; and
- Where such damage occurs, provision is made for re-instatement and rehabilitation;

11.2 Acceptance of Requirements

In order to achieve these objectives, the Developer and Contractor bind themselves jointly and severally to fulfil and comply with all the obligations contained herein, as well as prescriptions and obligations contained in other documents controlling the development of the PV facility inclusive of the BESS.

11.3 Contractor's Pre-Construction Obligations

Contractors may not commence any construction on the facility until:

- The Contractor and the ECO have carried out a joint site inspection (this is to be done as part of the pre-construction compliance workshop as detailed in the EMPr);
- A qualified ecologist has undertaken an inspection of the final development footprint and determined the number, species and extent of protected / listed plant species within the BESS footprint;
- A permit for the removal or relocation-and-transplant of these protected / listed plant species has been obtained from the Kimberly office of the Northern Cape Department of Environmental Affairs & Nature Conservation (DEANC);
- Search and rescue of sensitive plants, within the development footprint has been carried out and signed off by the ECO (where this is necessary);
- The construction and no-go areas are suitably demarcated to the satisfaction of the ECO;
- Where necessary, approval of Building / Construction Plans has been obtained from the local authority; and
- All contract staff has attended the required environmental induction training and on-going environmental education sessions, as necessary.

11.4 Contractor's Obligations during Construction

- The Contractor is required to comply with the necessary Health and Safety requirements as required by the Occupational Health and Safety Act of 1993;
- The Contractor must comply with the construction requirements as detailed in the EMPr, including the attached original EMPr (Appendix B), EA conditions (Appendix C) and Risk Assessment.
- The contractor must comply with all the requirements detailed in the Environmental Authorisation;
- All conditions, processes and fees as prescribed by the Local Authority must be complied with; and
- The Contractor shall only be permitted to erect a single signboard which must comply with legislative requirements.

12 NON-COMPLIANCE

Should any person commit an action of non-compliance he/she may be convicted of an offence, in terms of Sub-regulation (1) of the National Environmental Management Act, to imprisonment for a period not exceeding two years or to a fine not exceeding an amount prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

Apart from a fine resulting from any legal mechanism, the ECO may advise the ER to impose a penalty for non-compliance in terms of this Environmental Management Programme (EMPr). The procedure detailed below is for a spot fine in terms of this EMPr and does not detail the procedure for fining in terms of any other legal mechanism.

12.1 Procedures

The contractor shall comply with the environmental specifications and requirements of this EMPr, the Environmental Authorisation (EA) and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the ER to impose a penalty.

In the event of non-compliance, the following recommended process shall be followed:

- The ECO shall issue a notice of non-compliance to the ER, stating the nature and magnitude of the contravention. A copy shall be provided to the Project Developer / Proponent.
- The ER will issue this notice to the Contractor.
- The Contractor shall act to correct the transgression within the period specified by the ER.
- The Contractor shall provide the ER with a written statement describing the actions to be taken to discontinue the non-compliance, the actions taken to mitigate its effects and the expected results of the actions. A copy shall be provided to the Project Developer / Proponent.
- In the case of the Contractor failing to remedy the situation within the predetermined time frame, the ER shall impose a monetary penalty (spot fine) based on the conditions of contract.
- Should the transgression be a blatant disregard of conditions of the EMPr or EA, the ER (on advice from the ECO) can at their discretion immediately issue a fine and require the remediation (without first giving the contractor a chance to remediate)
- In the case of non-compliance giving rise to physical environmental damage or destruction, the ER shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor the full costs incurred in doing so.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMPr, disagreement regarding the implementation or method of implementation of conditions of the EMPr or EA etc. any party shall be entitled to require that the issue be referred to specialists for determination.
- The ER on advice from the ECO shall always have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

12.2 Offences and Penalties

Any avoidable non-compliance with the conditions of the EMPR shall be considered sufficient ground for the imposition of a penalty by the Engineer.

Possible offences, which should result in the issuing of a contractual penalty, include, but are not limited to:

- Unauthorised entrance into no-go areas;
- Catching and killing of wild animals, and removal or damage to conservation-worthy plant species;
- Open fires outside of the contractor camp site and insufficient fire control;
- Unauthorised damage to natural vegetation;
- Unauthorised camp establishment (including stockpiling, storage, etc.);
- Hydrocarbons / hazardous material: negligent spills / leaks and insufficient storage;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping etc.);
- Erosion due to negligence / non-performance;

- Excessive cement / concrete spillage / contamination; and
- Non-induction of staff.

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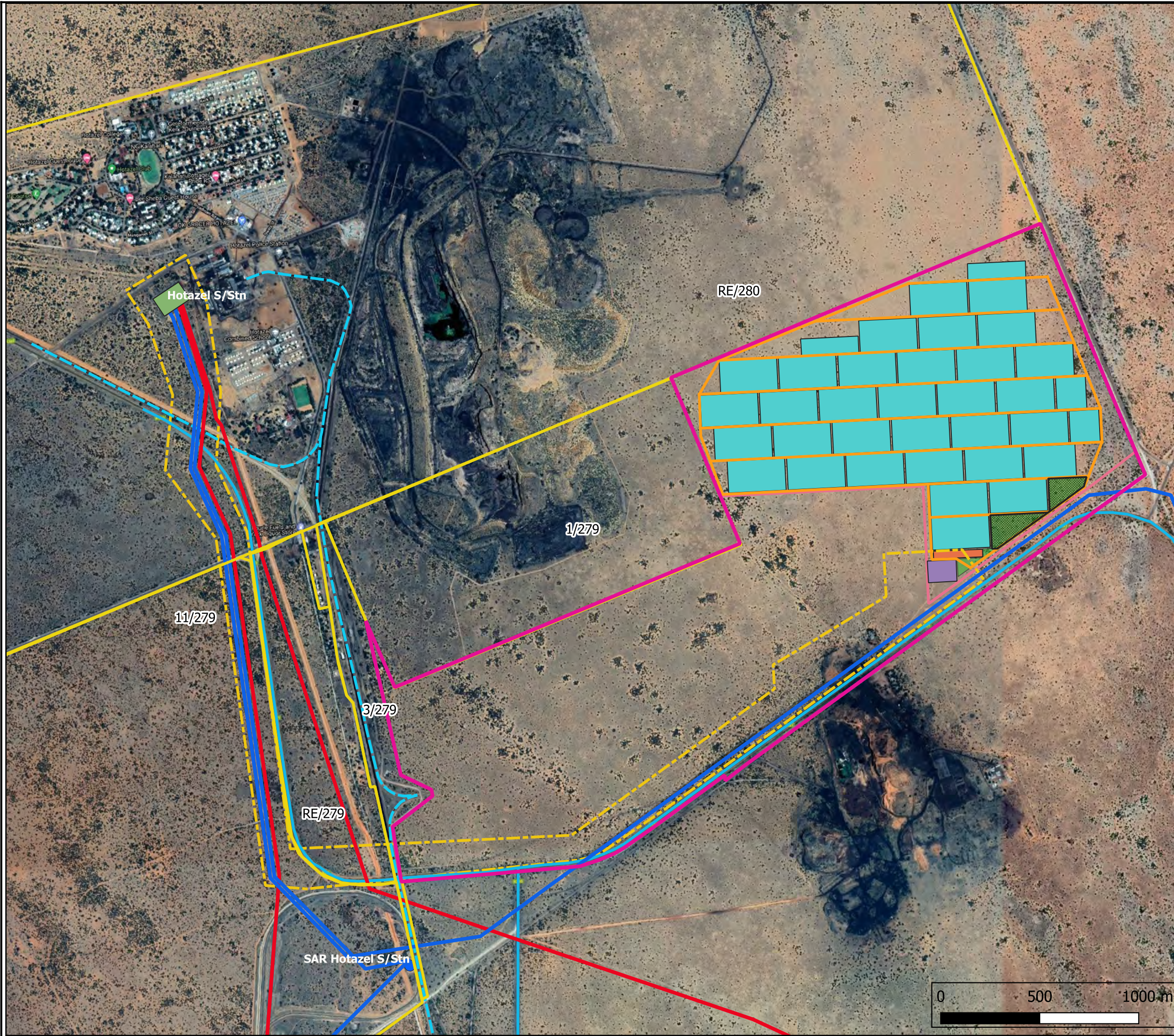
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- Existing infrastructure**
- Remainder of Farm York A 279
 - Neighbouring properties
 - Eskom Hotazel Substation
 - Eskom 132 kV Line
 - Eskom 66 kV Line
 - Roads
 - Railways
- Proposed Layout components**
- Internal road network
 - Grid Connection Corridor
 - BESS area
 - Temporary laydown area
 - PV Blocks
 - On-site substation/collector
 - O&M block
 - Site boundary

Description	By	Date	Rev
Registered address: ABO Wind renewable energies (Pty) Ltd Unit B1, Mayfair Square Century Way, Century City 7441 South Africa www.abo-wind.com			
Project Hotazel Solar 2			
Title Solar Park + BESS layout			
File -			
Project code 9313	Drawing No 03	Date 10/11/2021	
Scale As shown		Drawn ZH	





ENVIRONMENTAL MANAGEMENT PROGRAMME

REVISION 2

for

HOTAZEL 2

on

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province

In terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended & Environmental Impact Regulations 2014



Prepared for Applicant: Hotazel Solar Facility 2 (Pty) Ltd

By: Cape EAPrac

Report Reference: JMR637/06

Department Reference: 14/12/16/3/3/2/2017

Case Officer: Mathlodi Mogorosi

Date: 15 April 2021

APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:

Cape EAPrac Environmental Assessment Practitioners

PO Box 2070

George

6530

Tel: 044-874 0365

Fax: 044-874 0432

Report written & compiled by: Dale Holder (Nat.Diploma Nature Conservation) who has 12 years experience as an environmental practitioner.

PURPOSE OF THIS REPORT:

For implementation by EPC & O&M contractor

APPLICANT:

Hotazel Solar Facility 2 (Pty) Ltd

CAPE EAPRAC REFERENCE NO:

JMR637/06

DEPARTMENT REFERENCE:

14/12/16/3/3/2/2017

SUBMISSION DATE

15 April 2021

TO BE CITED AS:

Cape EAPrac, 2018. Environmental Management Programme: Hotazel 2, On Remaining Extent (Portion 0) of the farm York A 279, District of Hotazel in the Northern Cape Province. Report Reference: JMO543/07.

DOCUMENT REVISION

Draft Environmental Management Programme (JMR637/07)

26 February 2021

Environmental Management Programme Revision 2 (JMR637/07)

15 April 2021

ENVIRONMENTAL MANAGEMENT PROGRAMME – REVISION 2

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended &
Environmental Impact Regulations 2010

Hotazel 2

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

Submitted for:

Departmental Review

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Report Issued by:

Cape Environmental Assessment Practitioners

Tel: 044 874 0365

Fax: 044 874 0432

Web: www.cape-eaprac.co.za

PO Box 2070

17 Progress Street

George 6530

ORDER OF REPORT

Environmental Management Programme - Legislated Requirements Checklist

Draft Environmental Management Programme – Main Report

- Appendix A:** Site Development Plan.
- Appendix B:** Stormwater, Erosion and Washwater Management Plan
- Appendix C:** Transport Study and Traffic Management Plan.
- Appendix D:** EMPr for Powerline (DEA, 2019)
- Appendix E:** EMPr for Substation (DEA, 2019)
- Appendix F:** Curriculum Vitae of EAP.
- Appendix G:** Environmental Authorisation (to be appended once received)
- Appendix H:** SAHRA Approval
- Appendix I:** Waste Management Plan
- Appendix J:** Environmental Sensitivity Maps

ENVIRONMENTAL MANAGEMENT PROGRAMME LEGISLATIVE REQUIREMENTS

This EMPr complies with the requirements in the acceptance of the Final Scoping Report as well as with Regulation 982 in terms of the 2014 Environmental Regulations.

Compliance checklists in terms of these three requirements are included in tables 1 – 2 below.

The competent authority¹ did not specify any specific requirements for the Environmental Management Programme. This EMPr is thus compiled in compliance with appendix of the 2014 EIA regulations.

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of how these requirements were incorporated into this EMPr.

Table 1: EMPr compliance with Appendix 4 of Regulation 982

Requirement	Description
Details of the EAP who prepared the EMPr; and; The expertise of the EAP to prepare an EMPr, including a curriculum vitae.	This EMPr was prepared by Dale Holder of Cape EAPrac who has more than 15 years' experience as an Environmental Assessment Practitioner . A company profile of Cape EAPrac as well as the CV of the EAP is attached in Appendix F.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	This EMPr covers all aspects of the project as currently under assessment. This includes the construction and operation of a photovoltaic (PV) solar facility with a generation capacity of 100Mw, including <ul style="list-style-type: none"> • Inverter stations; • an on-site substation (including a feed-in transformer to allow the generated power to be connected to Eskom's electricity grid); • A132kV overhead powerline connecting to the project to the Hotazel Substation • auxiliary buildings, including; • administration / office & security (gate house), • control room & workshop, • visitor centre, • ablution / change room and • warehouse / storeroom. • a laydown area; • internal electrical reticulation network (underground cabling); • an internal road / track network ; • An access road; • Rainwater tanks; and • electrified perimeter fencing around the solar facility, including security infrastructure.
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure	The Site Development Plan attached in Appendix A, includes the sensitive features identified by participating specialists and indicates how these have been incorporated.

¹ In their acceptance of the final scoping report.

Requirement	Description
on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	No specific exclusion areas were identified by participating specialists. All areas outside of the perimeter fence must be considered no go areas for construction.
A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities.	Section 1.5.1 of this EMPr.
A description and identification of impact management outcomes required for the aspects contemplated above.	The impact management outcomes are included under the actions detailed in sections 4-7.
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to – (i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	Throughout the report. Summarised in Section 13 of the EMPr.
The method of monitoring the implantation of the impact management actions contemplated above.	Section 8.
The frequency of monitoring the implementation of the impact management actions contemplated above.	Section 8.
An indication of the persons who will be responsible for the implementation of the impact management actions.	Figures 1 & 2 and Section 8
The time periods within which the impact management actions must be implemented.	Throughout the EMPr
The mechanism for monitoring compliance with the impact management actions.	Section 8
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	Section 8
An environmental awareness plan describing the manner in which –	Section 4.2 and 4.3

Requirement	Description
(i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	
Any specific information that may be required by the competent authority.	The competent authority has not provided any specific requirements for inclusion in the EMPr. This will be updated should the competent authority provide such comments on the Draft Environmental Management Programme.

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ABBREVIATIONS

AC	Alternating Current
Alt.	Alternative
BGIS	Biodiversity Geographic Information System
CARA	Conservation of Agricultural Resources Act (43 of 1983)
CBA	Critical Biodiversity Area
cctv	Closed Circuit Television (camera)
CDSM	Chief Directorate Surveys and Mapping
cm	Centimetre
DAFF	Department of Agriculture, Forestry & Fisheries
DEFF	Department of Environment, Forestry and Fisheries
DEA&DP	Department of Environmental Affairs & Development Planning (Western Cape)
DEANC	Department of Environmental Affairs & Nature Conservation (Northern Cape)
DEIR	Draft Environmental Impact Report
DME	Department of Minerals and Energy
DoE	Department of Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation

EAP	Environmental Impact Practitioner
ECA	Environmental Conservation Act (73 of 1989)
ECO	Environmental Control Officer
ECR	Environmental Control Report
EHS	Environmental, Health & Safety
EIA	Environmental Impact Assessment
EIP	Environmental Implementation Plan
EIR	Environmental Impact Report
ELC	Environmental Liaison Committee
ER	Engineer Representative
ESA	Environmental Site Agent / Ecological Support Area
EMPr	Environmental Management Programme
FPA	Fire Protection Association
GPS	Global Positioning System
ha	Hectare
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IPP	Independent Power Producer
ISO	International Organisation for Standardisation (ISO 9001)
Kl / Klit	Kilo Litre
Km	Kilometre
Km/h	Kilometres per hour
kV	Kilo Volt
LLRC	Low Level River Crossing
lt	Litre
LUDS	Land Use Decision Support
LUPO	Land Use Planning Ordinance
m	Metre
m ²	Metres squared
m ³	Metres cubed
MW	Mega Watt
NCHRA	Northern Cape Heritage Resources Authority
NCNCA	Northern Cape Nature Conservation Act (9 of 2009)
NEMA	National Environmental Management Act (107 of 1998, as amended in 2006)
NEMBA	National Environmental Management: Biodiversity Act (10 of 2004)
NERSA	National Energy Regulator of South Africa
NFA	National Forest Act (84 of 1998)
NHRA	National Heritage Resources Act (25 of 1999)
No.	Number
NSBA	National Spatial Biodiversity Assessment
NVFFA	National Veld and Forest Fire Act (101 of 1998)
NWA	National Water Act (36 of 1998)
pH	Potential of Hydrogen
PIA	Paleontological Impact Assessment
PM	Post Meridien; "Afternoon"
PV	Photovoltaic
PVC	Polyvinyl Chloride (piping)
REDs	Road Environmental Dust Suppressant
SAHRA	South African National Heritage Resources Agency

SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework
S&EIR	Scoping & Environmental Impact Reporting
SAPD	South Africa Police Department
WULA	Water Use Licence Application

1. INTRODUCTION

Cape EAPrac has been appointed by the Applicant, Hotazel Solar Facility 2 (Pty) Ltd, as the independent **Environmental Assessment Practitioner (EAP)** responsible for compilation of the **Environmental Management Programme (EMPr)** for the Hotazel 2 solar energy facility.

This EMPr is submitted in compliance with the National Environmental Management Act (NEMA, Act 107 of 1998, as amended) for the proposed development of Hotazel 2, located near Hotazel in the Northern Cape.

Hotazel Solar Facility 2 (Pty) Ltd. have an option to lease a portion of the remainder of the Remaining Extent (Portion 0) of the farm York A 279, District of Hotazel in the Northern Cape Province, from the landowner, Mr PAC Jansen (executor of the Estate of the late JP Jansen estate number 020517/2014), for the purposes of developing the proposed solar facility. A copy of a letter from Mr PAC Jansen (executor of the Estate of the late JP Jansen estate number 020517/2014) providing consent for the continuation of the EIA is attached in the Environmental Impact Report. Prior to construction, the abovementioned option agreement will be replaced by a Notarial Deed of lease.

The total generation capacity of the solar facility will not exceed **100MW** for input into the national Eskom grid.

The key purpose of this EMPr is to ensure that the remedial and mitigation requirements identified during the Scoping & Environmental Impact Reporting process are implemented during the lifespan of the project (design to decommissioning). The EMPr is thus a management tool used to minimise and mitigate the potential environmental impacts, while maximising the benefits.

A detailed description of the proposed project and a description of the affected environment are provided in the Environmental Impact Report (EIR) which should be referred to where necessary.

This EMPr must be read in conjunction with the Generic EMPr's (DEA, 2019) for the powerline and substation infrastructure attached in Appendix D and E respectively.

1.1 EMPr APPROVAL & REVISIONS

This EMPr, once authorised, is a legally binding document and contravention with this document constitutes a contravention with the Environmental Authorisation.

The supplementary plans annexed to this EMPr (Stormwater, Erosion and Washwater Management Plan, Traffic Impact Assessment and Traffic Management Plan) must be read in conjunction with this EMPr.

The EMPr may however require amendment at certain stages through the lifespan of the project. The incidences which may require the amendment of this document include:

- Incorporation of conditions of approval contained in the Environmental Authorisation;
- Changes in environmental legislation;
- Results of post-construction monitoring and audit;
- Per instruction from the competent authority; and
- Changes in technology and best practice principles.

Should a significant amendment to this EMPr be required, an application for this must be submitted to the competent authority and approved before such changes are implemented.

1.2 CONTRACTUAL OBLIGATION

This EMPr must be included in ALL tender and contract documentation associated with this project. It must be noted that this EMPr is relevant and binding not only on the activities associated with the construction of the solar project, but also for all associated infrastructure upgrades required in order for this development to be undertaken, namely access road, substation, auxiliary buildings and internal roads).

1.3 ORGANISATIONAL REQUIREMENTS

In order to ensure effective implementation of the EMPr, it is necessary to identify and define the organisational structure for the implementation of this document.

The proposed organisational structure during **construction** is as follows:

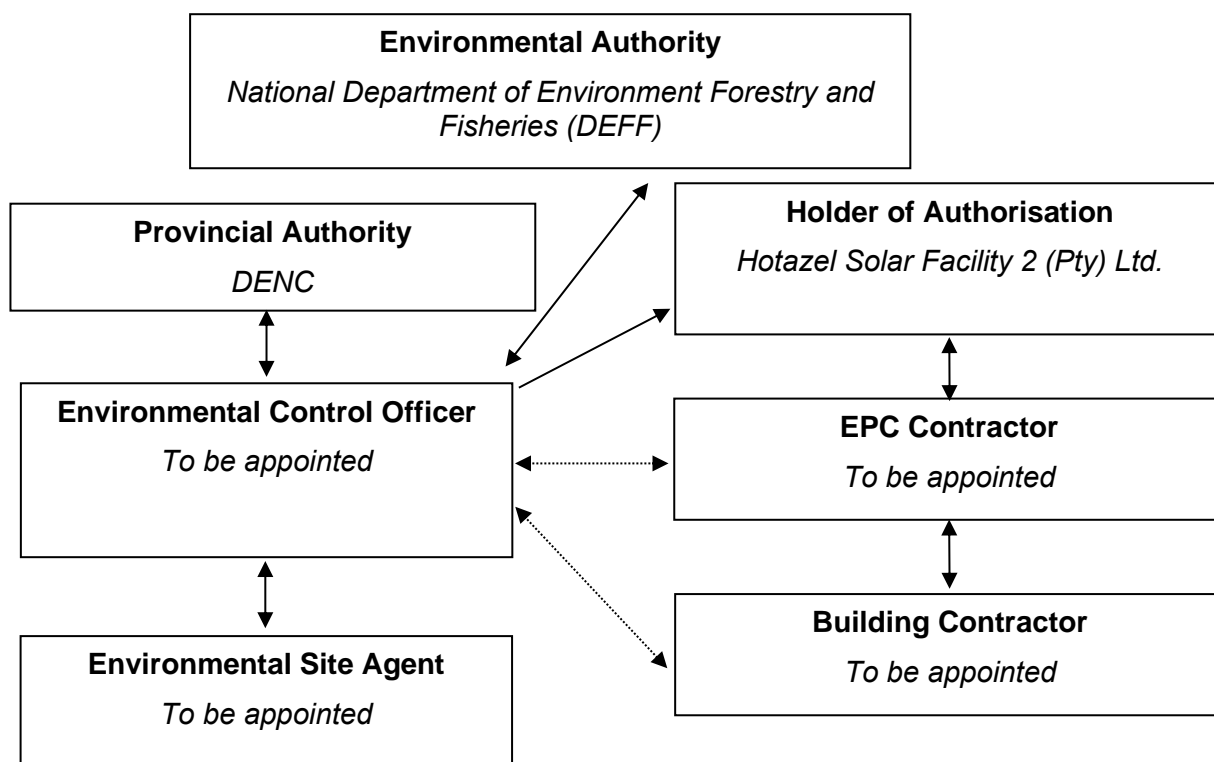


Figure 1: EMPr organisational structure during the construction phase

The proposed organisational structure during the **operation** of the facility is as follows:

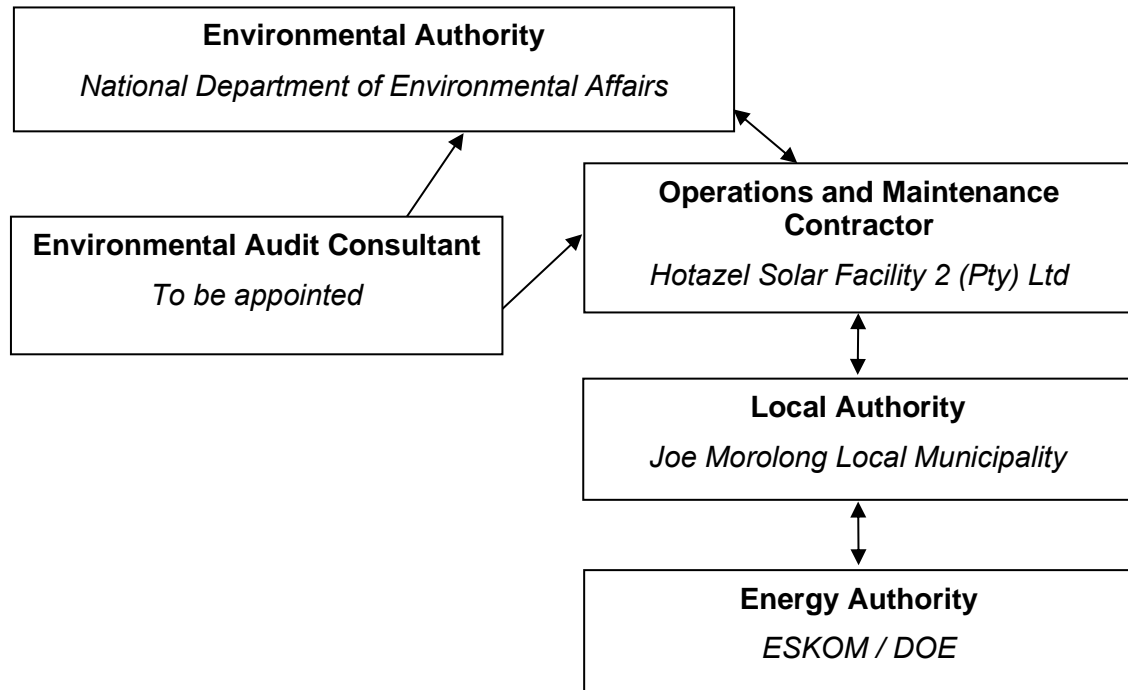


Figure 2: EMPr organisational structure during the operation phase.

Details regarding the roles and responsibilities of the various parties in these organisational structures are included in Section 2 below.

1.4 PROJECT PROPOSAL

Hotazel 2 is to consist of solar photovoltaic (PV) technology with fixed, single or double axis tracking mounting structures, with a net generation (contracted) capacity of 100 MW_{AC} (MegaWatts), as well as associated infrastructure, which will include:

- On-site substation / collector switching station;
- Auxiliary buildings (gate-house and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.);
- Inverter-stations, transformers and internal electrical reticulation (underground cabling);
- Access and internal road network;
- Laydown area;
- An overhead distribution power line to distribute the generated electricity from the on-site substation/ collector switching station to the Eskom Hotazel sub-station.
- Rainwater tanks; and
- Perimeter fencing and security infrastructure.

This EMPr is specific to the Hotazel 2 development and its associated infrastructure. Please refer to the SDP attached in appendix A that shows the development area.

1.5 APPROACH TO THE EMPR

This EMPr addresses the environmental management of the four key phases of the project, namely:

- The design and pre-construction phase;
- The construction phase;
- The operation phase; and
- The closure and decommissioning phase.

The following impact management objectives are applicable to each of these phases:

- To ensure compliance with the Conditions of the Environmental Authorisation (EA), the EMPr, recommendations of participating specialists, conditions imposed by the Local Authority as part of the rezoning and subdivision, as well as the service agreements;
- To ensure the least possible damage to:
 - Existing infrastructure on and adjacent to the site;
 - Indigenous flora and fauna (biophysical environment); and
 - Water quality of surface and groundwater on and surrounding the site. Particularly the water quality exiting the site
- To ensure that construction and development are undertaken with due consideration to all environmental factors; and
- Where such damage occurs, provision is made for re-instatement and rehabilitation;

1.5.1 Pre-construction Phase

The pre-construction phase of the development refers to the final layout design considerations and the site preparation (fine-scale design and placement, survey of development site and associated infrastructure, demarcation of no-go areas, establishment of site camp and laydown area, vegetation clearing for establishment of internal road network).

1.5.2 Construction Phase

The construction phase of the development refers to the earthworks and the actual construction of the civil works (installation of the PV panel arrays, construction of internal roads, stormwater structures and auxiliary buildings and on site substation), as well as the external infrastructure such as power lines, access roads and gate house. The construction phase will start with the perimeter fencing of the facility and will end with final landscaping and re-vegetation / rehabilitation of the site and surrounding areas.

1.5.3 Operation Phase

The operational phase commences once the facility starts providing power into the national grid. There may be a stage where both construction and operation activities overlap i.e. occur on site at the same time. The operation phase included the monitoring and maintenance activities required for the efficient functioning of the facility (e.g. cleaning and repair of solar panels, brush-cutting of vegetation etc.), as well as health and integrity of the surrounding environment (e.g. removal alien vegetation, management of erosion etc.).

1.5.4 Closure and Decommissioning Phase

Closure and decommissioning refers the decommissioning of the panel arrays at the end of their operational lifespan. For the purpose of this report, two possible scenarios are considered, namely:

- The re-use, repair &/ upgrade of the facility for alternative power generation;
- The total decommissioning of the solar facility.

Solar panels that are found to be functional (albeit it less efficient) after the upgrade or decommissioning of the facility could be re-used for other purposes (e.g. at local rural schools and clinics or other primary service providers).

2. ROLES AND RESPONSIBILITIES

Throughout the lifespan of this project, a number of individuals and entities will fulfil various roles and responsibilities to ensure the effective implementation of this EMPr. The key roles and responsibilities are detailed in the table below.

Table 2: Roles and responsibilities with regard to the implementation of this EMPr.

Role	Responsibility
Environmental Authority – National Department of Environmental Affairs.	
<p>The National Department of Environment, Forestry and Fisheries (DEFF) is the competent / delegated authority responsible for compliance with the relevant environmental legislation.</p>	<ul style="list-style-type: none"> • Ensure overall compliance with the EA & EMPr. • Review this document and any revisions thereof. • Undertake site audits at their discretion. • Review ECO Reports. • Review Audit Reports • Review Incident Reports. • Enforce legal mechanisms for contraventions of this EMPr and EA.
Holder of the Authorisation – Hotazel Solar Facility 2 (Pty) Ltd.	
<p>The holder of the Authorisation is generally responsible for ensuring compliance with all statutory requirements relating to the Solar facility.</p>	<ul style="list-style-type: none"> • Ensuring compliance with the conditions set out in the Environmental Authorisation issued in terms of the NEMA, as well as those prescribed by other relevant legislation and guidelines. • Compliance with the requirements set out in this EMPr. • Ensuring all other permits, permissions and licences from all other statutory departments are in place.
Environmental Control Officer (ECO) – To be appointed	
<p>The ECO fulfils an advisory role to monitor, guide and report compliance with the EMPr.</p>	<ul style="list-style-type: none"> • Revise, update and amend the EMPr if necessary and submit the amendments to the competent authority for consideration. • Ensure all relevant persons have a copy of the EMPr and any amendments thereof. • Advise the employer's representative on any additional environmental authorisations and permits that may be required. • Facilitate the Environmental Education / Induction Training with the contract staff. • Review and comment on Method Statements relevant to environmental management and make recommendations to the employer's representative. • Report any non-compliance with the EMPr or EA to the employer's representative and competent authority if necessary. • Undertake regular site inspections in compliance with this EMPr. • Monitor, audit and verify that all works comply with the EA and the EMPr. • Keep record of EMPr implementation, monitoring and audits, including a full photographic record of works. • Comply and submit regular Environmental Control Reports to the competent authority, as well as employer's representative &/ holder of the authorisation. • Report any environmental incidents or environmental impacts immediately to the employer's representative and the competent authority if necessary. • Assist the contractor and employer's representative planning for and implementing environmentally sensitive problem solving. • Advise the employer's representative on suggested "stop work" orders.
Environmental Site Agent (ESA) – To be appointed	
<p>To assist the ECO with the day to day implementation and monitoring of the environmental management actions that are taking place on site.</p>	<ul style="list-style-type: none"> • Day to day environmental control of contractors on site during the construction phase. • Monitoring of construction management activities during the construction phase. • Weekly reporting to the ECO.
Employers Representative – To be appointed	
<p>The Employer's representative role is likely to be fulfilled by the project engineer and assumes overall delegated responsibility for compliance with this EMPr, the EA, the conditions of the LUPO</p>	<ul style="list-style-type: none"> • Issue site instructions to the contractor based on the advice of the ECO. • Ensure that all detailed design incorporates the requirements of the EMPr and EA.

Role	Responsibility
Approval, Conditions of the WULA and all applicable legislation for the duration of the construction phase.	<ul style="list-style-type: none"> • Ensure that the EMPr is included in all tender documents issued to prospective contractors and sub-contractors. • Ensure the EMPr is included in final contract documents. • Ensure that the Tenderers/Contractors adequately provide for compliance with the EMPr in their submissions. • Ensure that the EMPr is fully implemented by the relevant persons. • Ensure the contractor provides the necessary method statements. • Be accountable, to the competent authority for any contravention or non-compliance by the Contractor. • Assist the contractor with input from the ECO in finding environmentally responsible solutions to problems. • Undertake regular site audits, site visits and inspections to ensure that the requirements of the EMPr are implemented • Give instructions on any procedures and corrective actions on advice from the ECO. • Report environmental incidents or non-compliance with the EA or EMPr to the environmental authority. • Issue spot fines, penalties or 'stop-work' orders for contravention of the EMPr and give instructions regarding corrective action.
Building Contractor – To be appointed	
The Contractor (main contractor) is responsible for the implementation of all construction activities associated with the Solar Facility.	<ul style="list-style-type: none"> • Overall project delivery for the construction of the Solar Facility to the satisfaction of the authorities and consultants. • Ensuring compliance with the Health & Safety requirements for the project. • Ensuring compliance with this Environmental Management Programme. • Promoting job safety and environmental awareness with Employees. • Ensure that all sub-contractors comply with this EMPr and all other statutory requirements.
Landowner – PAC Jansen (executor of the Estate of the late JP Jansen estate number 020517/2014)	
The landowner is responsible for compliance with legislation applicable to the management of the remainder of the property as a whole.	<ul style="list-style-type: none"> • E.g.: In terms of the National Veld & Forest Fires Act (101 of 1998) - an owner on whose land is subject to a risk of veldfire or whose land or part of it coincides with the border of the Republic, must prepare and maintain a firebreak on his or her land as close as possible to the border.

3. LEGISLATIVE FRAMEWORK

Several pieces of legislation were considered during the development of this EMPr. The holder of the EA must ensure compliance with all relevant legislation including those detailed below and any others that may be relevant to the works to be undertaken.

3.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

3.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998, AS AMENDED)

The National Environmental Management Act (NEMA, Act 107 of 1998, as amended), makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the national Department of Environmental Affairs) based on the findings of an Environmental Impact Assessment

(EIA). It also embraces the notion of sustainable development as contained in the Constitution of South Africa (Act 108 of 1996) in that everyone has the right:

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

NEMA requires that measures are taken that “*prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*” In addition:

- That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be altogether avoided, are minimised and remedied;
- That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
- Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on all matters relating to the environment and by means of Environmental Implementation Plans (EIP) and Environmental Management Programmes (EMPr).

The Applicant may not undertake activities listed in terms of the NEMA without prior authorisation.

In compliance with **Section 24N** of NEMA, this EMPr must contain the following (over and above the content requirements listed in the Table 1 above):

Table 3: Compliance with Section 24N of NEMA

EMPr Provision	Report Reference
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of planning & design .	This is addressed in Sections 4 ,
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of pre-construction and construction activities .	This is addressed in Sections 4 .
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of the operation or undertaking the activity in question.	This is addressed in Sections 6
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of the rehabilitation of the environment.	This is addressed in Section 6 & 7 of this EMPr – It has also been dealt with under construction requirements for the specific reason that these works must take place during the construction phase.
Information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts in respect of closure , if applicable	This is dealt with in Section 7 of the EMPr.
Details and expertise of the person who prepared the EMPr.	These details are included at the beginning of the report (after cover page and report conditions).

EMPr Provision	Report Reference
A detailed description of the aspects of the activity that are covered by the EMPr.	This is dealt with under the introduction in Section 1 , this EMPr.
Information identifying the persons who will be responsible for the implementation of the measures addressed in the EMPr.	This is dealt with in Section 2 , of this EMPr.
Information in respect of mechanisms proposed for monitoring compliance with the EMPr and for reporting on the compliance.	This is dealt with in Section 8 of this EMPr.
Measures to rehabilitate the affected environment.	This is dealt with in Sections 5 & 6 of this EMPr as well as in appendix D-G.
Description of the manner in which pollution will be prevented and remedied.	This is dealt with throughout the EMPr, but specifically in Sections 5 & 7
The EMPr must furthermore, where appropriate;	
Set out time periods within which measures must be implemented.	This is dealt with throughout the EMPr and summarised in section 13.
Contain measures regulating responsibilities for any environmental damage.	This is dealt with is 14 of this EMPr.
Develop an environmental awareness plan describing the manner in which the applicant intends to inform his or her Employees of any environmental risks and how to deal with these risks in order to avoid pollution or degradation of the environment.	This is dealt with in Sections 4.3 & 4.4 of the EMPr.

In addition to the above, the Holder of the Authorisation is bound by “Duty of Care”, as described in Section 28 of NEMA (107 of 1998, as amended), which “...obliges every person who causes, has caused or may cause significant environmental degradation to take reasonable measures to prevent such degradation from occurring, continuing or recurring”. Thus, all mitigation measures recommended by the relevant authorities and specialists must be implemented to avoid occurrence, continuation or repeat of environmental degradation.

3.3 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEMBA) (ACT 10 OF 2004)

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The Draft National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No 32689, 6 November 2009) has been gazetted for public comment.

The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the NSBA 2004. In terms of the EIA regulations, a basic assessment report is required for the transformation or removal of indigenous vegetation in a critically endangered or endangered ecosystem regardless of the extent of transformation that will occur. **However, all of the vegetation types on both the study sites are classified as Least Threatened.** Please see the **ecological impact assessment** attached in **Annexure D1** in the Environmental Impact Report for further information.

NEMBA also deals with endangered, threatened and otherwise controlled species. The Act provides for listing of species as threatened or protected, under one of the following categories:

- **Critically Endangered:** any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered:** any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.

- **Vulnerable:** any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- **Protected species:** any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Certain activities, known as Restricted Activities, are regulated by a set of permit regulations published under the Act. These activities may not proceed without environmental authorisation.

3.4 NORTHERN CAPE NATURE CONSERVATION ACT (NCNCA) (No. 9 OF 2009)

The Northern Cape Nature Conservation Act provides inter alia for the sustainable utilisation of wild animals, aquatic biota and plants as well as permitting and trade regulations regarding wild fauna and flora within the province. In terms of this act the following section may be relevant with regards to any security fencing the solar development may require.

Manipulation of boundary fences: 19. No Person may –

- (a) *erect, alter, remove or partly remove or cause to be erected, altered, removed or partly removed, any fence, whether on a common boundary or on such person's own property, in such a manner that any wild animal which as a result thereof gains access or may gain access to the property or a camp on the property, cannot escape or is likely not to be able to escape therefrom.*

According to the SANBI SIBIS database, 286 indigenous plant species have been recorded from the quarter degree squares 2820 BD, DB and 2821 AC and CA.

An ecological expert will have to be appointed to undertake a detailed site walk through in support of an application for the removal of threatened plants in terms of this legislation. Any conditions of this licence, once issued, must be complied with by the contractor and the holder of the EA.

3.5 NATIONAL FORESTS ACT (NFA) (No. 84 OF 1998):

The National Forests Act provides for the protection of forests as well as specific tree species, quoting directly from the Act: “*no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated*”.

Protected species which occur in this habitat type include *Vachelia erioloba*, *Vachelia haemotoxylon*.

Please refer to the **Ecological Impact Assessment Report** in the EIR for a detailed description of the plant species found to occur in the area.

An ecological expert will have to be appointed to undertake a detailed site walk through in support of an application for the removal of threatened plants in terms of this legislation. Any conditions of this licence, once issued, must be complied with by the contractor and the holder of the EA.

3.6 NATIONAL VELD & FOREST FIRE ACT (NVFFA) (ACT 101 OF 1998)

The purpose of the National Veld and Forest Fire Act is to **prevent and combat veld, forest and mountain fires** throughout the Republic of South Africa and to provide institutions, methods and practices for achieving this purpose. Institutions include the formation bodies such as **Fire**

Protection Associations (FPA's) and Working on Fire. The Act provides the guidelines and constitution for the implementation of these institutions, as well as their functions and requirements.

Every owner on whose land a veldfire may start or burn or from whose land it may spread must prepare and **maintain a firebreak on his or her side of the boundary between his or her land and any adjoining land**. The procedure in this regard and the role of adjoining owners and the fire protection association are dealt with within this Act. An owner on whose land is subject to a risk of veldfire or whose land or part of it coincides with the border of the Republic, must prepare and maintain a firebreak on his or her land as close as possible to the border.

The proposed solar site is arid and given the sparse, succulent nature of the vegetation, it is highly unlikely that fires are a normal occurrence in the area, and thus fires at the site are not considered to be a significant risk. However, under exceptional circumstances, such as following years of very high rainfall, sufficient biomass may build up to carry fires, especially in the fenced-off areas. Therefore, **management of plant biomass within the site** should be part of the management of the facility. Given the risk that this would pose to the development, it would be in the operators' interests to manage plant cover at an acceptable level through grazing or alternative management practice (brush-cutting). Grazing by livestock is the simplest and most ecologically sound way to manage plant biomass and is recommended as the preferred method to manage plant biomass at the site (Todd, 2012 & 2013).

3.7 CONSERVATION OF AGRICULTURAL RESOURCES ACT – CARA (ACT 43 OF 1983):

CARA provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. The Conservation of Agricultural Resources Act defines different categories of alien plants:

- Category 1 - prohibited and must be controlled;
- Category 2 – must be grown within a demarcated area under permit; and
- Category 3 - ornamental plants that may no longer be planted, but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the flood lines of water courses and wetlands.

The abundance of alien plant species on the Hotazel 2 site is very low, which can be ascribed firstly to the aridity of the site.

In terms of soil and water resources, it must be noted that no surface water resources occur on the site.

3.8 NATIONAL HERITAGE RESOURCES ACT (NHRA) (ACT 25 OF 1999)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). South African National Heritage Resources Agency (SAHRA) is the enforcing authority in the Northern Cape, and is registered as a Stakeholder for this environmental process.

In terms of Section 38 of the National Heritage Resources Act, SAHRA will comment on the detailed Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- *the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- *any development or other activity which will change the character of a site exceeding 5 000 m² in extent;*
- *the re-zoning of a site exceeding 10 000m² in extent.*

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority.

Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3).

In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

The EPC and O&M contractor will have to ensure compliance with the SAHRA approval.

- If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- The following conditions apply with regards to the appointment of specialists: With reference to the mitigation work noted above, a qualified archaeologist must be appointed to undertake the work in terms of the permit applied for as noted above;
 - If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued

3.9 NATIONAL WATER ACT (NWA), NO 36 OF 1998

Water use in South Africa is controlled by the NWA and the enforcing authority is the DWS. The NWA recognises that water is a scarce and unevenly distributed national resource in South Africa. Its provisions are aimed at achieving sustainable and equitable use of water to the benefit of all users and to ensure protection of the aquatic ecosystems associated with South Africa's water resources. The provisions of the Act are aimed at discouraging pollution and waste of water resources.

In terms of the Act, a land user, occupier or owner of land whereon which an activity that causes, or has the potential to cause pollution of a water resource, has a duty to take measures to prevent pollution from occurring. If these measures are not taken, the responsible authority may do whatever

is necessary to prevent the pollution or remedy its effects, and to recover all reasonable costs from the responsible person.

Section 21 of the NWA specifies a number of water uses, including taking water from a water resource, the storing of water, impeding or diverting the flow of water in a watercourse, discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit, disposing of waste in a manner which may detrimentally impact on a water resource, disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process, discharging water from underground for the safety of people, and altering the bed, banks, course or characteristics of a watercourse. These Water uses requires licencing in terms of Section 22 (1) of the Act, unless it is listed in Schedule 1 of the NWA, is an existing lawful use, the water use falls under a General Authorisation issued under Section 39 of the Act, or if the responsible authority waives the need for a licence.

3.10 ASTRONOMY GEOGRAPHIC ADVANTAGE ACT, 2007 (ACT NO 21 OF 2007)

The purpose of the Act is to preserve the geographic advantage areas that attract investment in astronomy. The entire Northern Cape Province, excluding the Tsantsabane Municipality, has been declared an astronomy advantage area. The Northern Cape optical and radio telescope sites were declared core astronomy advantage areas. The Act allowed for the declaration of the Southern Africa Large Telescope (SALT), Meerkat and Square Kilometre Array (SKA) as astronomy and related scientific endeavours that has to be protected.

3.11 GUIDELINES & STRATEGIC DOCUMENTS

The following guidelines and strategic documents were considered during the compilation of this EMPr.

3.11.1 National Waste Management Strategy

The National Waste Management Strategy presents the South African government's strategy for integrated waste management for South Africa. It deals among others with: Integrated Waste Management Planning, Waste Information Systems, Waste Minimisation, Recycling, Waste Collection and Transportation, Waste Treatment, Waste Disposal and Implementing Instruments.

3.11.2 Waste Minimisation Guideline Document for Environmental Impact Assessment Review (May 2003)

This guideline, although compiled on a provincial level, was considered pertinent to this EMPr. This Guideline raises awareness to waste minimisation issues and highlights waste and wastage minimisation practices. Part B of this document is of particular importance, as it addresses issues of general waste and wastage minimisation during construction activities.

3.11.3 National Building Regulations

The National Building Regulations and Building Standards Act as amended must be complied with. This act addresses, inter alia:

- Specifications for draftsmen, plans, documents and diagrams;
- Approval by local authorities;
- Appeal procedures;
- Prohibition or conditions with regard to erection of buildings in certain conditions;
- Demolition of buildings;
- Access to building control officers;
- Regulations and directives; and

- Liability.

3.11.4 Other Guidelines considered

In addition to those described above, the following guidelines were also considered during the compilation of this EMP and should be complied with by the O&M Contractor.

- DEADP (2003). Waste Minimisation Guideline for Environmental Impact Assessment reviews. NEMA EIA Regulations Guideline & Information Series, Department Environmental Affairs & Development Planning.
- DEAT (2004). Environmental Management Plans, Integrated Environmental management, Information Series 12, Department Environmental Affairs & Tourism
- DEADP (2010). Guideline for Environmental Management Plans. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

4. DESIGN & PRE CONSTRUCTION PHASE

The following management considerations are to be adopted and implemented during the design and pre-construction phase.

4.1 PRE CONSTRUCTION ECOLOGICAL REQUIREMENTS

The ecological specialist, Simon Todd (2021), recommended that a contracted ecologist should undertake a preconstruction survey of the final development footprint to ascertain the identity and exact number of individuals of protected species affected by the development. A single integrated permit, which covers nationally or provincially listed plant species permitting requirements, as well as meets TOPS regulations, must be obtained from the Department of Environmental Affairs & Nature Conservation (DEANC) permit office in Kimberly prior to the any plant rescue / transplant and/or removal activities. A licence for the removal of species protected in terms of the National Forest Act is also required.

An Environmental Control Officer (ECO) should be present for the site preparation and initial clearing activities to ensure the correct demarcation of no-go areas, facilitate environmental induction with construction staff and supervise any flora relocation and faunal rescue activities that may need to take place during the site clearing.

4.2 PRE-CONSTRUCTION HERITAGE REQUIREMENTS

No specific archaeological or other heritage features have been identified by participating specialists.

4.3 PRE-CONSTRUCTION ENVIRONMENTAL COMPLIANCE WORKSHOP

OUTCOME: To ensure that all contract senior staff members have knowledge of the environmental requirements for the site in terms of the EA and EMPr.

It is a required action that a pre-construction environmental compliance workshop be undertaken before any construction commences on site. This workshop can be combined with a site handover meeting, but must take place before any activities take place on site and before any plant is moved onto site. The purpose of this workshop is to ensure that all relevant personnel are familiar with the provisions of the EMPr, as well as the conditions of the EA.

The following people must be present at this Environmental Compliance Workshop:

- The ECO;
- The Main Civil Contractor (including contract manager, site agent and foreman);
- The Electrical Contractor (including contract manager, site agent and foreman);
- The Consulting Engineers (electrical, civil and structural, whichever applicable); and
- Project Management.

Provision should be made in contract and tender documentation to attend a 6 hour workshop that will be chaired by the ECO.

4.4 ENVIRONMENTAL INDUCTION TRAINING & ENVIRONMENTAL EDUCATION

OUTCOME: To ensure that all staff members have knowledge of the environmental requirements for the site in terms of the EA and EMPr.

It is a required action that the ECO, in consultation with the contractor and engineer, shall ensure that all construction workers receive an induction presentation, as well as on-going environmental education & awareness, on the importance and implications of the EMPr and the environmental requirements it prescribes. The presentation shall be conducted, as far as is possible, in the

Employees' language of choice. The contractor should provide a translator from their staff for the purpose of translating, should this be necessary.

There are a number of listed and **protected species** present at the site and it is confirmed that some of these would be impacted by the development. Further plant species may well be identified by the ecological specialist to occur within the proposed development area during the pre-construction survey. It is important that the ECO and all construction staff be made aware of these species and how to identify them, so that they can be suitably avoided and/or protected where possible (see Section 16 of the EMPr for photographs and description of important plant species). Section 17 provides details of the alien plant species, that will need to be removed from site on a systematic basis. It is the ECO's responsibility to print enlarged posters of these photographs and descriptions for use in the Environmental Induction / Education training sessions. It is also the ECO's responsibility to ensure that the required permit be obtained from the Kimberly DEANC office prior for the transplant and/or removal of protected plant species, as well as to provide instruction on and guide all plant rescue, transplant and rehabilitation activities (i.e. plants must be carefully removed and transplanted outside the development area as directed by the ecological specialist and/or the ECO).

Further plant species of conservation value, as well as archaeological occurrences, could possibly be found during site clearing and construction. If found these must **be demarcated as NO-GO** areas and must be avoided by all staff until such time as all the required permits are in place.

As a minimum, induction training should include:

- Explanation of the importance of complying with the EMPr;
- Explanation of the importance of complying with the EA;
- Discussion of the potential environmental impacts of construction activities;
- The benefits of improved personal performance;
- Employees' roles and responsibilities, including emergency preparedness (this should be combined with this induction, but presented by the contractors Health and Safety Representative);
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this EMPr and its specification (no-go areas, etc.); and
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

Furthermore, the induction training must ensure that construction workers/staff understand that **no form of wildlife poaching, collecting (plant or animal) or other form of disturbance will be permitted** on the construction site or the adjacent areas.

As the project progresses, all new staff must undergo an environmental induction prior to commencing with any activities on site.

The contractor must keep records of all environmental training sessions, including names, dates and the information presented. Details of the environmental induction are also to be included in the environmental control reports.

4.5 DEMARCATION OF NO-GO AREAS

OUTCOME: To ensure the protection of sensitive features outside of the development footprint.

The demarcation of no-go areas is of extreme importance to ensure that disturbance is restricted to the future developed area and that areas outside this demarcated area are protected and not damaged unnecessarily.

The proposed actions for demarcation are as follows:

- The exact footprint of the construction area, including panel foundations and all roads (including access, haul and internal roads which must make use of the final road layout) and infrastructure are to be surveyed and pegged before any physical construction commences on site.
- In order to ensure effective demarcation of no go areas, the construction of the perimeter fence should be the first activity that takes place on site.
- All sensitive features as identified by specialists or ECO must be demarcated for exclusion.
- The contractor, in conjunction with the ECO, must walk the areas determined and mark the full extent of the area to be disturbed (allowing sufficient space for the construction activity);
- All areas beyond these demarcated areas are considered as “no-go” areas; and
- Construction staff must be briefed as part of the environmental induction on the requirements regarding the no-go areas.

4.6 CONSTRUCTION PHASING

There are a number of important aspects of the construction phasing that must be implemented to ensure that the potential impact on the environment is kept to a minimum. The contractor must consider the following requirements regarding phasing, when developing the construction programme. This construction programme must be approved by the engineer’s representative with input from the ECO.

- The perimeter fence and road network to access the panel arrays should be established first and then all vehicular movement must be restricted to within this road network - This will minimise the impact of construction traffic on the undeveloped portion of the property. The only vehicles allowed to move off this road network are those needed to install the PV Mounting structures (i.e. Drills and Piling machines).
- Sites that will be temporarily disturbed by the construction activities (e.g. material loading, temporary storage, turning circles, etc.) must also be included in the road access network.

4.7 ESTABLISHMENT OF CONTRACTORS SITE CAMP

OUTCOME: To ensure that the activities that typically take place in a contractors site camp are restricted to predefined area that does not contain or is in close vicinity of any sensitive features.

The Contractors Site Camp must be established in consultation with the ECO. The site camp must utilise the area defined for laydown are in the Site Layout Plan. The following actions are applicable:

- The Contractors Site Camp must be situated within the development area. Site Camps that are allowed off-site may only be erected once written permission from the landowner is obtained and any other necessary authorisations are in place;
- Topsoil from the site camp area must be stripped and stockpiled for re-use during rehabilitation. This must be done to ensure no contamination of the topsoil while the site camp is in use;
- The site camp must be suitably fenced off;
- All construction material must be stored in the site camp, unless otherwise approved by the ECO. This may exclude PV panel mounting structures and panel components which will be stored at each of the assembly point, as per the manufacturer plans;
- No personnel may overnight in the site camp, except in the case of a night watchman / security;
- Fires for cooking and/or heating are only allowed within the site camp after consultation with the Health and Safety Representative;
- Fuel may only be stored in the camp site;

- Storage of waste must take place within the site camp and must be removed on a regular basis; and
- The site camp must be provided with sufficient ablution facilities (chemical toilets and potable water) of which the content must be disposed of regularly and at the suitable facilities.

4.8 WATER CONSERVATION IN INFRASTRUCTURE

OUTCOME: To ensure sustainable resource use

The following actions must be considered in the design and construction of the associated structures / infrastructure (on-site substation, auxiliary buildings etc.) to be constructed as part of the PV solar development:

4.8.1 Ablution / Sanitation Facilities

The on-site substation, control and workshop buildings should be fitted with rainwater collection and storage systems to supply water to the taps and toilets in these buildings, as well as any outdoor requirements (landscaping, washing etc.).

All toilets should be fitted with dual flush systems. Conservative estimates have shown that a saving of more than 22 000 litres per household (this could apply to the workshops that are occupied by day and night staff) can be achieved annually with the installation of dual flush toilets (Aquanotion, 2008).

All taps to be installed in the control / substation / workshop buildings must be fitted with low-flow faucets. Low flow faucets use aerators to reduce the flow of the water. These can either be built into the faucet or added as an aftermarket product. The faucets in bathrooms should have a peak flow of less than 10 litres per minute.

4.9 ENVIRONMENTAL CONTROL OFFICER

OUTCOME: Independent monitoring and reporting on compliance with EA and EMPr.

An Environmental Control Officer (ECO) must be appointed for this project (this appointment must take place during the pre-construction phase before the commencement of any of the authorised activities, including site preparation).

The ECO will be responsible for monitoring, reviewing and verifying compliance by the EPC Contractor with the environmental specifications of this EMPr and the conditions of the EA.

The appointed ECO must be independent of the EPC contractor and must be suitably qualified and have experience of environmental monitoring and control on similar scale projects. The holder of the EA must provide the name and contact details of the ECO to the Director: Compliance and Monitoring at DEFF.

The responsibilities of the ECO include but are not limited to the following:

- Provide environmental induction training to contractors on site prior to commencing of construction activities;
- Be fully knowledgeable of all the licences and permits issued to the site;
- Review, maintenance and update of the EMPr;
- Liaison between the Project Proponent, Contractors, Authorities and other lead stakeholders on all environmental concerns, including the implementation of the EMPr;
- Compilation of Environmental Control Report/s (ECR) to ensure compliance with the EMPr and authorisations. Reports should be submitted to the relevant authority on a monthly basis;

- Compilation of the Environmental Audit Report or Environmental Completion Statement, six months after completion of construction. Reports should be submitted to the National and Provincial environmental authority as well as the holder of the EA and EPC contractor;
- Monitor compliance with this EMPr;
- Monitor compliance with the EA;
- Monitor implementation of the mitigation and rehabilitation measures and recommendations referred to in the EA, Final Environmental Impact Report, participating specialists and this EMPr.
- Recommend the issuing site instructions to the Contractor for corrective actions required (formal site instructions are to be issued by the Engineers Representative with input from the ECO);
- The ECO should be on site for the duration of site establishment and preparation;
- ECO site inspections should then be undertaken once a month to ensure compliance with the EMPr. The duration of these visits may be increased or decreased at the discretion of the ECO in consultation with the Engineers Representative. The Environmental Site Agent as described below should be on site daily and be in communication with the ECO on a daily basis;
- Attendance of contractors site meetings;
- Maintain a record of environmental incidents (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the ECR;
- Maintain a public complaints register in which all complaints and action taken / responses must be recorded. This information must also be included in the ECR;
- Keep Record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO; and
- Engineers Representative on advice from the ECO, has the authority to stop work on site if he / she consider that any actions of excessive non-compliance of the EMPr, authorisations or General Duty of Care are taking place.

4.9.1 Environmental Site Agent (ESA)

OUTCOME: To ensure independent full time environmental expertise on site to monitor and report on compliance

An Environmental Site Agent (ESA) should be appointed for the duration of the construction period of the solar project (this ESA must be appointed in the pre-construction phase, prior to the commencement of construction activities). The Terms of Reference for the ESA include, but are not limited to the following actions:

- To ensure compliance with the EMPr and EA;
- The ESA is required to be on site daily, which may be reviewed by the ECO and resident engineer as construction requirements dictate;
- Assisting the contractor with environmental induction of the contractors;
- Attending all on site construction meetings (including, but not limited to, technical and contractors' meetings);
- Providing the ECO with a weekly compliance report in a format defined by the ECO;
- Developing and maintaining a detailed photographic site record throughout the construction phase of the project;
- Maintaining a register of all site instructions;
- Maintaining file records of all method statements provided by the contractors;
- Management and ensuring contractor implementation with the environmental rehabilitation plan (still to be developed);
- Revision and updating the EMPr in conjunction with the ECO, if and when required;

- Maintain a record of environmental incidents (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the weekly reports;
- Maintain a public complaints register in which all complaints and action taken / responses must be recorded. This information must also be included in the ECR;
- In the event that the ESA observes non-compliance that requires a “stop work” order, the ECO must immediately be informed and will request the Engineers Representative to issue such an order if necessary.

4.9.2 ECO and ESA competency

The ECO must have a minimum of a tertiary level qualification in the natural sciences field, as well as at least 8 years’ experience and proven competency as an ECO, preferably with experience on similar scale Developments.

The ESA must have a minimum of a tertiary level qualification, as well as at least 2 years’ experience and proven competency as an ESA.

4.10 PLANT RESCUE AND PROTECTION

OUTCOME: To reduce the impact on protected and sensitive botanical features.

The following pre-construction requirements are relevant to plant rescue and protection.

- Identification of all listed species which may occur within the site, based on the SANBI SIBIS database as well as the specialist EIA studies for the site and any other relevant literature
- A walk-through of the final development footprint by a suitably qualified botanist/ecologist to locate and identify all listed and protected species which fall within the development footprint.
- A walk-through report following the walk-through which identifies areas where minor deviations to roads and other infrastructure can be made to avoid sensitive areas and important populations of listed species. The report should also contain a full list of localities where listed species occur within the development footprint and the number of affected individuals in each instance, so that this information can be used to comply with the permit conditions required by the authorisation as well as provincial requirements.
- Search and rescue operation of all listed species within the development footprint that cannot be avoided. Affected individuals should be translocated to a similar habitat outside of the development footprint and marked for monitoring purposes. Those species suitable for search as rescue will be identified in the walk-through report. It is important to note that a permit is required to translocate or destroy any listed and protected species even if they do not leave the property. Some plants can also be offered to national collections such as the National Botanical Gardens, but no plants should be allowed to go to private collectors unless this is approved by the provincial conservation authorities.

5. CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT

The items contained in this section of the EMPr must be implemented during the construction phase of the development of Hotazel 2.

5.1 WATER SUPPLY

OUTCOME: To ensure water used during construction is lawfully and sustainably utilised.

The contractor must ensure a supply of water is available on site for sanitation, drinking, dust suppression etc.

Water used for dust suppression on gravel roads must be of a quality compliant with the General Special Effluent Standards (31/03/2009): Temperature: max.25⁰C, pH: between 5.5 & 7.5 and conductivity: not be increased more than 15% above the intake water & not exceed 250 milli-Siemens per metre (determined at 25⁰C). The water used for dust suppression is likely to be borehole water / municipal water, and not treated effluent. This item is specific to water supply during the construction phase. Water supply for the washing of panels is discussed under the operational phase requirements.

5.2 TOPSOIL HANDLING

OUTCOME: To ensure that the handling of topsoil does not result in the pollution or loss of the resource.

In terms of best practice and for rehabilitation purposes, it is essential that a 150mm layer of topsoil from the building and road footprints (i.e. the on-site substation, auxiliary buildings and contractor's site camp) be stripped and stockpiled prior to the commencement of construction activities in each area. Topsoil should not be stripped from the development footprint below the solar panels.

Topsoil is of utmost importance for use in rehabilitation of disturbed areas and should therefore under no circumstances be mixed with sub-soils. Since the panels are to be installed using low impact pile installation, topsoil from underneath the panel arrays must be left in situ.

The following actions regarding topsoil handling must be considered:

- A minimum 150mm layer of topsoil from the access and internal roads, on-site substation, auxiliary buildings and contractors site camp;
- The topsoil stockpile site must be approved by the ECO and may not be within any sensitive areas as defined by the ECO;
- The topsoil may not be stockpiled within any of the remaining natural areas (i.e. any open spaces between modules). A existing disturbed area within the laydown areas should rather be chosen for this purpose;
- The topsoil stockpile must be protected from erosion and dust as indicated by the ECO and this EMPr;
- The topsoil must be replaced into disturbed areas (road verges, cable trenches and contractors site camp) on completion of construction;
- No topsoil may be mixed with subsoil; and
- No topsoil may be used as bedding material for cable trenches.

5.3 TRANSPORT & TRAFFIC MANAGEMENT

The Transport Study and Traffic Management plan is attached in **Appendix C** and forms an integral part of this EMPr and management actions defined in this plan must be complied with.

5.4 CONCRETE MANAGEMENT

OUTCOME: To ensure that the handling of concrete does not result in pollution of soil or water resources.

Proper concrete management is of utmost importance. Concrete works are likely to be limited to the construction of the on-site sub-station and auxiliary buildings, and are not likely to be extensive (the preferred alternative for the panel support structures will make use of a technology that does not require concrete footings, due to rammed piles/earth screws/rock anchors). However, in instances

where rammed piles/earth screws or rock anchors will not practically possible and for other concrete work associated with the substation and inverter stations, the following requirements in terms of concrete management should take place.

Cement powder has a high alkaline pH that may contaminate and adversely affect both soil pH and water pH negatively. A rapid change in pH can have consequences on the functioning of soil and water organisms, as well as on the botanical component.

The use of ready-mix trucks delivering concrete directly to site is recommended. Mass batching of concrete on site should be limited as far as possible.

The following actions must be implemented regarding the delivery of concrete to site:

- Trucks should deliver pre-mixed concrete to the site and pour the concrete directly into the prepared excavations.
- When concrete trucks have unloaded, there is a requirement to wash out the inside of the concrete drum. Water can be provided to the trucks for this purpose (at the discretion of the contractor). Concrete suppliers may **NOT** dispose of this wash water anywhere on site. Trucks should return to their depot for this purpose; and
- Any spillages of concrete outside of the excavations (including haulage routes) must be cleaned up immediately by the supplier.

Where small batching of concrete or plaster takes place on site, the following actions must be implemented:

- Concrete batching may only take place in areas approved by the ECO (preferably in the Site Camp);
- Concrete mixing areas must have bund walls or a settling pond in order to prevent cement run off;
- Once the settling ponds dry out, the concrete must be removed and dispatched to a suitable disposal site. Ideally, all concrete batching should take place on an area that is to be hard surfaced as part of the development (building floor, road or paved area);
- In order to avoid resource contamination, concrete batching should not be located within 60m of any stormwater management structure.
- If an area outside of the site camp is identified for batching it must first be approved by the ECO and all topsoil must be stripped and stockpiled for re-use.
- Batching at satellite sites must be done on a batching plate i.e. wood or metal sheet, to prevent soil contamination.

5.5 CABLE TRENCHES

OUTCOME: To ensure that trenching activities are restricted and do not result in loss of topsoil resources.

Electric cables required to connect the inverters to the on-site substation (i.e. AC cables) within the boundaries of Hotazel 2 will be installed underground, **within or parallel to the internal road network and/or paths between the panel rows**, as far as possible. Please refer to the SDP included in **Appendix A**. There will also be limited trenching associated with the DC cabling (although the majority of this will be aboveground – mounted to the panel arrays.)

Cable trench excavation, cable laying and backfill must be carried out in a systematic and continuous operation, **minimising the length of trench open at any one time** in order to reduce the risk of runoff. Cable trenches must be backfilled in such a manner as to prevent the trench from acting as a ditch or a conduit for water flow. In this regard, cable trenches, as with the internal road network, should follow the contours of the land as far as possible.

The following actions must be implemented by the contractor:

- Trenching shall be kept to a minimum through the use of single trenches for multiple service provision (including communication cabling and AC cabling in the same trenches);
- The planning and selection should be done in approximation to the SDP and cognisance shall be given to minimising the potential for soil erosion;
- Trench routes with permitted working areas shall be clearly defined and marked with prior to excavation;
- The stripping and separation of topsoil and subsoil shall occur as stipulated by the Engineer Representative (ER). Soil shall be stockpiled for use as backfilling as directed by the ER with input from the ECO;
- Trench lengths shall be kept as short as practically possible before backfilling and compacting;
- Trenches shall be backfilled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion. Excess soil shall be stockpiled in an area approved by the ER with input from the ECO;
- Stockpiled topsoil must be replaced at the top of excavated trenches;
- The ER with input from the ECO may require the planting of additional vegetation along trench routes in order to speed up rehabilitation (particularly in areas that may be prone to erosion); and
- Open trenches must be inspected daily for faunal entrapment (small mammals and reptiles). These are to be removed before backfilling of the trenches.

5.6 MANAGEMENT OF ARCHAEOLOGICAL RESOURCES

OUTCOME: To ensure that works do not result in significant loss of archaeological resources.

Should any archaeological and/or paleontological remains, including (but not limited to) fossil bones, fossil shells, coins, indigenous ceramics, colonial ceramics, marine shell heaps, stone artefacts, bone remains, rock art, rock engravings and any antiquity be discovered during construction, the ECO should safeguard these (preferably *in situ*) and report the find immediately to the South African Heritage Resources Council (SAHRA) and the Northern Cape Heritage Resources Authority (NCHRA), so that they are not disturbed further until the necessary guidance and approval have been obtained and the appropriate action (e.g. recording, sampling or collection) can be taken by a professional archaeologist or palaeontologist.

5.7 NOISE MANAGEMENT

OUTCOME: To ensure nuisance from noise and vibration does not occur.

Although the proposed development is located outside of an urban area, the following noise management actions are applicable to the construction phase of Hotazel 2 due to its proximity to farm homesteads:

- It is recommended that noise generation be kept to a minimum and that construction activities be confined to normal working hours (07:00 - 17:00 on workdays). Should the Contractor / Engineer wish to deviate from these work hours, this must be discussed during the Pre-Construction / Initial Environmental Compliance Workshop with the ECO and recorded in the necessary Method Statements;
- Provide baffle and noise screens on noisy machines as necessary;
- Provide absorptive linings to the interior of engine compartments;
- Ensure machinery is properly maintained (fasten loose panels, replace defective silencers);
- Switch off machinery immediately when not in use; and
- Reduce impact noise by careful handling.

The Contractor shall be responsible for compliance with the relevant legislation with respect to noise *inter alia* Section 25 of ECA (73 of 1989) and standards applicable to noise nuisances in the Occupational Health and Safety Act (No. 85 of 1993).

5.8 DUST CONTROL & MANAGEMENT

OUTCOME: To ensure there is no health risk or loss of amenity due to emission of dust to the environment.

Every effort to minimise dust pollution on the site must be undertaken. The contractor must implement the following measures with regards to the management of dust on site:

The most important dust control measure is achieved by maintaining as much of the vegetative cover as possible (the method of securing panels with minimal excavations supports this measure). The following actions are suggested in this regard:

- Construction vehicles must adhere to speed limits and minimisation of haul roads must be implemented;
- During dry, dusty periods haul roads should be kept dampened to prevent excess dust. No potable water may be used for damping haul roads;
- All vehicles used to deliver or remove loose material (sand, soil, gravel etc.) to and from site must be covered with a 60% shade cloth to avoid dust blowing from the vehicle.
- As an alternative, products such as Road Environment Dust Suppressants (REDS) would be recommended in order to minimise the use of water to control dust pollution. This is to be determined by the ECO during construction as required; and
- Exposed stockpile materials must be adequately protected against wind (covered), and should be sited in consideration of the prevailing wind conditions.

Apart from those actions detailed above, the following additional measures must be implemented:

- Dust nuisances shall comply with the applicable standards according to the Occupational Health and Safety (Act No. 85 of 1993). The contractor shall be solely responsible for the control of dust arising from the contractor's operations and for any costs against the Employer for damages resulting from dust;
- The contractor shall take all reasonable measures to minimise the generation of dust as a result of construction activities to the satisfaction of the ER;
- Removal of vegetation shall be avoided until such time as soil stripping is required and similarly exposed surfaces shall be re-vegetated or stabilised as soon as is practically possible;
- Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present;
- During high wind conditions the site manager, with input from the ECO, must evaluate the situation and make recommendations as to whether dust damping measures are adequate, or whether work should cease altogether until the wind speed drops to an acceptable level.
- Where possible, soil stockpiles shall be located in sheltered areas where they are not exposed to the erosive effects of the wind. Where erosion of stockpiles becomes a problem, erosion control measures shall be implemented at the discretion of the site manager.
- Vehicle speeds shall not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated and non-vegetated areas.
- Appropriate dust suppression measures shall be used when dust generation is unavoidable, e.g. dampening with water or use of REDS, particularly during prolonged periods of dry weather in summer. Such measures shall also include the use of temporary stabilising measures (e.g. chemical soil binders, straw, brush packs, clipping etc.).
- Straw stabilisation shall be applied at a rate of one bale per 10m² and harrowed into the top 100mm of top material for all completed earthworks (i.e. all those areas that are not hard

surfaced as part of the Solar Facility). This is only relevant to areas disturbed through the construction activities (such as cable trenches) and not areas where vegetation remains intact.

- Should water be used for dust suppression on gravel roads, it must be of a quality compliant with the General Special Effluent Standards (31/03/2009): Temperature: max.25°C, pH: between 5.5 & 7.5 and conductivity: not be increased more than 15% above the intake water & not exceed 250 milli-Siemens per metre (determined at 25°C). The water used for dust suppression must be sourced from a licenced resource.

5.9 SECURITY FENCING

OUTCOME: To ensure that fencing protects project assets while limiting impact on faunal passages.

During construction it may be necessary to fence in the Contractor's Site Camp (to avoid theft of construction equipment and materials) and the PV Laydown Area/s (to avoid theft of the solar panels and associated infrastructure). These temporary fencing will be restricted to these areas and be removed at the end of the construction phase. The completed solar facility will be fenced with a permanent perimeter electrified fence in order to prevent theft of infrastructure during operation. Recommendations made by the ecologist applicable to the erection of this permanent fence are as follows:

- The fencing should be constructed in manner which allows for the passage of small and medium sized mammals, at least at strategic places, such as areas of dense vegetation. Steel palisade fencing (20cm gaps minimum) is a good option in this regard as it allows most medium-sized mammals to pass between the bars, but remains an effective obstacle for humans. Alternatively, the lowest strand or bottom of the fence should be elevated to 15 cm above the ground at least at strategic places to allow for fauna to pass under the fence.
- Electrified strands should not be within 20cm of the ground, because tortoises retreat into their shells when electrocuted and eventually succumb from repeated shocks.
- Only the facility itself should be fenced-off.
- Any security lighting associated with the fencing should be kept to a minimum and be of the low-UV emitting kind that attracts fewer insects.
- The final fencing plan should be submitted to the ECO for comments and approval.
- The establishment of the perimeter fence should be the first activity that takes place on site.

5.10 BLASTING

OUTCOME: To ensure any unlikely blasting activities do not disturb sensitive environmental nor social features

Due to the fact that the PV panel mountings will be drilled / rammed into the earth and will thus not require extensive excavation for foundations, it is therefore highly unlikely that blasting will be required. Should blasting be required for whatever reasons, the following actions must be implemented:

- No blasting may take place within 50m of a borehole without approval of a suitably qualified engineering geologist. Preventative mitigation actions could include installing PVC casing and screens in potentially affected boreholes before blasting, while damaged boreholes will have to be re-drilled (this scenario is however highly unlikely, as blasting will probably not take place);
- A current and valid authorisation shall be obtained from the relevant authorities and copied to the ER prior to any blasting activity;
- A method statement shall be required for any blasting related activities;
- All laws and regulations applicable to blasting activities shall be adhered to at all times;

- A qualified and registered blaster shall supervise all blasting and rock splitting operations at all times;
- The contractor shall ensure that appropriate pre-blast monitoring records are in place (i.e. photographic and inspection records of structures in close proximity to the blast area);
- The contractor shall allow for good quality vibration monitoring equipment and record keeping on site at all times during blasting operations;
- The contractor shall ensure that emergency services are notified, in writing, a minimum of 24 hours prior to any blasting activities commencing on site;
- The contractor shall take necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly-rock. Environmental damage caused by blasting / drilling shall be repaired at the contractor's expense to the satisfaction of the ER and the ECO;
- The contractor shall ensure that adequate warning is provided immediately prior to all blasting. All signals shall also be clearly given;
- The contractor shall use blast mats for cover material during blasting. Topsoil may not be used as blast cover;
- During demolition, the contractor shall ensure, where possible, that trees in the area are not damaged;
- Appropriate blast shaping techniques shall be employed to aid in the landscaping of blast areas, and a method statement to be approved by the ER, shall be required in this regard; and
- **At least one week prior to blasting, the relevant occupants/owners of surrounding land shall be notified by the contractor and any concerns addressed.** Buildings within the potential damaging zone of the blast shall be surveyed, preferably with the owner present and any cracks or latent defects pointed out and recorded either using photographs or video. Failing to do so shall render the contractor fully liable for any claim of whatsoever nature, which may arise. The contractor shall indemnify the employer in this regard.

5.11 DRILLING RAMMING OPERATIONS

OUTCOME: To ensure that panel mounting operations do not cause pollution or undue mechanical damage to the environment

It is envisioned that drilling and ramming will be the preferred method of installing the panel support structures / sub-structures. The following actions must be implemented in this regard. Please refer to the engineering report in the Draft EIR for further detail in this regard.

- The contractor shall submit a method statement detailing his proposals to prevent pollution (from hydraulic fluids, fuel or oil leaks) during ramming operations. This shall be approved by the ER (with input from the ECO) prior to the onset of any ramming operations;
- The contractor shall take all reasonable measures to limit dust generation as a result of ramming operations (also see Section 5.8 addressing management of dust);
- Noise and dust nuisances shall comply with the applicable standards according to the Occupational Health and Safety (Act No. 85 of 1993);
- Any areas or structures damaged by the ramming and associated activities shall be rehabilitated by the contractor to the satisfaction of the ER with input from the ECO.

5.12 STORMWATER, WASHWATER AND EROSION MANAGEMENT

OUTCOME: To ensure that stormwater and washwater do not cause erosion or pollution of the receiving environment.

The Stormwater, Erosion and Washwater Management Plan (Attached in **Appendix B**) forms an integral part of this EMPr and must be adopted and implemented by the holder of the EA. The following key actions are required:

- To limit soil erosion, construction activities (more specifically clearing of land) should be limited to the dry season (May to October) as far as possible.
- Upstream and downstream berms, for each construction site, should be implemented during the pre-construction and construction phases of the project. Upstream diversions will ensure limited surface flows through construction areas. Downstream berms will ensure that sediments eroded from within the construction site will be trapped, therefore reducing the impact to the downstream receiving environment. It is recommended that the berms are constructed out of a non-erodible material, such as sand bags with plastic liners.
- Materials excavated during the construction phase should be deposited in areas outside of stormwater channels. This will ensure minimal contact between concentrated stormwater runoff and the excavated materials.
- Machinery used during the construction process should be regularly (at least daily) checked for oil leaks. During periods where the machinery is not in use, drip trays should be placed under the machinery to contain any spillages.
- Fuels and hydrocarbon stores used during the construction phase should be lined and bunded such that spills from the store areas will not enter the receiving environment.
- Clearing of vegetation for construction purposes must be undertaken in accordance with a method statement. The method statement must include the method of clearing, recovery of and disposal of vegetation.

5.13 FIRE MANAGEMENT AND PROTECTION

OUTCOME: To reduce the risk of fire to infrastructure and environment.

As mentioned above in Section 3.6 above, it is the landowner's responsibility to develop and maintain firebreaks as well as be sufficiently prepared to combat veld fires.

The solar development site is arid, with sparse vegetation cover and fires are not a natural phenomenon in the area. However, under exceptional circumstances, such as following years of very high rainfall, sufficient biomass may build up to carry fires. Therefore, management of plant biomass within the site should be part of the management of the facility. Grazing by livestock is the simplest and most ecologically sound way to manage plant biomass and is recommended the preferred method to manage plant biomass at the site. Alternative management practices can include brush-cutting. Utilisation of non-selective herbicides for the management of biomass is prohibited on site.

The following actions must however be considered with regards to fire protection on site:

- Fires should **only be allowed within fire-safe demarcated areas** (preferably within the site camp);
- **No fuelwood collection** should be allowed on-site;
- The **total removal of all invasive alien vegetation** should take place in order to decrease the fire risk – Although there were few invasive plants identified during the environmental process, these may establish to a degree as a result of site disturbance. This must be done in accordance with an Alien Vegetation Management Plan;
- Cigarette butts may not be thrown in the veld, but must be disposed of correctly. The contractor, with input from the ECO, must **designate smoking areas** (in compliance with the Tobacco Products Control Amendment Act 63 of 2008) with suitable receptacles for disposal;

- In case of an emergency, the **contact details of the local fire and emergency services** must be readily available;
- Contractors must ensure that **basic firefighting equipment and suitably qualified/experienced personal** are available on site at all times, as per the specifications defined by the health and safety representative / consultant;
- The fire risk on site is a point of discussion that must take place as part of the pre-construction compliance workshop and the environmental induction training prior to commencement of construction; and
- The contractor must also comply with the requirements of the Occupational Health and Safety Act with regards to fire protection.

5.14 SANITATION DURING CONSTRUCTION

OUTCOME: To ensure safe and healthy sanitation for construction staff without increasing pollution risk

Portable chemical ablution facilities must be made available for the use by construction staff for the duration of the construction period. The following actions must be implemented in this regard:

- Toilet and washing facilities must be available to the site personnel at all times;
- These facilities must be situated within the site camp and away from freshwater resources;
- One toilet for every 15 personnel is required;
- The facilities must be serviced on a regular basis to prevent any overflow or spillage;
- The servicing contractor must dispose of the waste in an approved manner (e.g. via the municipal waste water treatment system);
- The ECO must be provided with the service providers' details and the service schedule for the site;
- The toilets should be secured to ensure that they do not blow over in windy conditions;
- All toilet facilities must be removed from site on completion of the contract period, and;
- Should the construction period be interrupted by a builders break, the toilets should be emptied prior to the break.

Sanitation during operation is discussed above under the design criteria in Section 4.7.

5.15 FUEL STORAGE

OUTCOME: To ensure lawful fuel storage that does not cause soil and water pollution.

The above ground storage of fuel is subject to authorisation in terms of the National Environmental Management Act (NEMA EIA regulations) if more than 30m³ is stored on site at any one time.

Should a temporary storage of hazardous or toxic materials / liquids (chemicals, fuels, lubricants and oils) be required, the Contractor must ensure that he/she complies with legislation and that the following actions are in place:

- Temporary fuel storage must take place within the contractors site camp in an area approved by the ECO;
- No storage of fuel may take place on any other portion of the site;
- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up immediately in the appropriate manner, as related to the nature of the spill.
- Mobile fuel units used to refuel plant on site must make use of drip trays when refuelling;
- Storage facilities may not be located within 60m of any freshwater resources where there is a potential for any spilled fuel to enter the resource;

- Fuel storage facilities should be located on flat ground. No cut and fill should take place immediately on or adjacent to fuel storage areas;
- All storage tanks should be double lined and be ISO 9001 certified;
- All storage tanks must be enclosed by bund walls;
- Bund walls must be constructed to contain at least 110% of the total capacity of the storage tanks;
- Bund walls must be constructed of impermeable material or lined to ensure that petroleum products cannot escape;
- A suitable material should be placed in the base of the bund walls to soak up any accidental spillages;
- The tanks should be locked and secured when not in use;
- Automatic shut-off nozzles are required on all dispensing units;
- Storage tanks should be drained within one week of completion of activities (only unused fuel can be used by the contractor on other work sites or returned to the supplier). If the construction program extends over the builders shutdown, the contractor must ensure that storage tanks are emptied prior to this period;
- All storage tanks, containers and related equipment should be regularly maintained to ensure safe storage and dispensing of material. The Engineer is to sign off on the condition and integrity of the storage tanks;
- Defective hoses, valves and containment structures should be promptly repaired;
- Vehicle and equipment fuelling should be undertaken on a hard impermeable surface, over drip pans or bund walls to ensure spilled fuel or toxic liquids is captured and cleaned up, and;
- The area must be totally rehabilitated on completion of the contract and all contaminated material must be carefully removed and disposed of at a licensed dumping site for that purpose.
- Spill kits must be made available on-site for the clean-up of spills.

5.16 CONSTRUCTION WASTE MANAGEMENT

OUTCOME: To ensure the management of waste is both lawful and sustainable.

5.16.1 Litter management

Wind and scavenger proof bins must be installed at the Contractor Site Camp and must be emptied on a weekly basis.

5.16.2 Construction Rubble and Waste

All construction rubble must be disposed of at an approved site established and registered for this purpose (no construction rubble may be spoiled anywhere on site). NO construction rubble may be used as fill in landscaping or any other areas on site.

5.16.3 Scrap Metal

Recycling of scrap metal is recommended. Scrap metal must be disposed of off-site at suitable facilities (e.g. municipal dump registered for this purpose).

5.16.4 Hazardous Waste

All hazardous waste (including chemicals, bitumen, fuel, lubricants, oils, paints etc.) shall be disposed of at an approved / registered hazardous-waste landfill site. The Contractor shall provide disposal certificates to the ECO.

Used oil and grease must be removed from site to an approved used oil recycling company.

Under NO circumstances may any hazardous waste be spoiled on the site.

Where possible, the maintenance of construction and delivery vehicles should take place off-site.

5.17 THEFT AND OTHER CRIME

OUTCOME: To ensure that activities on site do not increase the criminal activity of the area.

An increase in crime during the construction phase is often a concern. In the case of Hotazel 2, this is likely to be negligible due to the extremely remote nature of the site. Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the developer and the contractor. Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a **jobsite security plan** prior to commencement of construction. This jobsite security plan should take into account protection of the construction site from both internal and external crime elements, as well as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant. **A copy of the jobsite security plan should be included in the first environmental control report to be submitted to the competent authority.**

It is likely that the Contractor's Site Camp and the PV Laydown area/s will be fenced with a temporary fence to avoid theft during construction. Additional security measures during construction will include CCTV camera surveillance and security guards.

The following actions are relevant in this regard (refer to Section 5.9 above for details of the facility permanent fencing):

- All portable construction equipment and material must be locked away within the Contractor's Site Camp overnight and during holiday periods;
- Fuel storage tanks must be locked when not in use;
- All unassembled / un-installed PV materials must be locked within the fenced Laydown areas overnight and during holiday periods.
- The minimum amount of lighting should be used at night and this should be of the low-UV emitting kind that attracts less insects.

It must be noted the **collection, hunting or harvesting of any plants or animals** at the site is **strictly forbidden**, and thus any person found undertaking any of these actions will be considered guilty of committing a crime. Any incidents of such crimes on nature must be reported to the ECO immediately.

5.18 PLANT RESCUE AND PROTECTION.

OUTCOME: To reduce the impact on protected and sensitive botanical features.

A plant rescue and protection plan must be developed to form an integral part of this EMPr.

The following environmental management actions applicable to the construction phase need to be incorporated into this plan.

5.18.1 Identification of species of conservation concern

The ToPS (Threatened and Protected Species) regulations provide for the regulation of activities which may directly or indirectly impact threatened and protected species. Such species are identified under NEMBA as well as by the National Red Data List of Plants. At a provincial level, the Northern Cape Nature Conservation Act (2009) also provides lists of species which are protected within the province. Species listed under the National Red Data List of Plants as well as those protected under the provincial legislation must be specified on permit applications required for site clearing.

A permit application will need to be submitted for these species and any requirements of the permit, once issued, must be complied with.

5.18.2 Mitigation & avoidance options

Where listed plant species fall within the development footprint and avoidance is not possible, then it may be possible to translocate the affected individuals outside of the development footprint. However, not all species are suitable for translocation as only certain types of plants are able to survive the disturbance. Suitable candidates for translocation include most geophytes and succulents. Although there are exceptions, the majority of woody species do not survive translocation well and it is generally not recommended to try and attempt to translocate such species.

5.18.3 Rescue and protection requirements

The following actions are required for the construction phases of the development lifecycle.

- ECO to monitor vegetation clearing at the site. Any deviations from the plans that may be required should first be checked for listed species by the ECO and any listed species present which are able to survive translocation should be translocated to a safe site.
- Any listed species observed within the development footprint that were missed during the preconstruction plant sweeps should be translocated to a safe site.
- Many listed species are also sought after for traditional medicine or by collectors and so the ECO should ensure that all staff attend environmental induction training in which the legal and conservation aspects of harvesting plants from the wild are discussed.
- The ECO should monitor construction activities in sensitive habitats such as near rivers and wetlands carefully to ensure that impacts to these areas are minimised.

5.19 VEGETATION CLEARING

OUTCOME: To ensure that vegetation is minimised and restricted to the development footprint.

The objective of mitigation for any development is to firstly avoid and minimise impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on vegetation and animal habitats, and to maximise re-vegetation and rehabilitation of disturbed areas. Some loss of vegetation is an inevitable consequence of the construction of Hotazel 2 and vegetation clearing required for the PV panel laydown area, roads, buildings etc. could impact listed plant species, as well as high-biodiversity plant communities. Vegetation clearing will also lead to habitat loss for fauna and potentially the loss of sensitive faunal species, habitats and ecosystems.

The following actions apply to vegetation clearing activities for the solar facility:

- Vegetation clearing must be kept to a minimum. If possible, the ground grass layer should be left intact and only the larger woody plants cleared or trimmed. All areas to be cleared should be clearly demarcated, prior to the commencement of clearing activities;
- Vegetation cleared / removed as part of the site clearing activities must be stockpiled for use during the re-vegetation and rehabilitation stage for brush-packing. The location of the vegetation stockpile can be in the same area as the topsoil stockpile, as designated in consultation with the ECO;
- Only those individuals of protected plant species directly within the development footprint should be cleared. Those which can be safely left intact (e.g. below or between the solar panel arrays) must not be disturbed;
- Any vegetation clearing that needs to take place as part of maintenance activities (during construction and operation phases) should be done in an environmentally friendly manner, using the most effective methodology suited to the target species (herbicides and/or manual clearing).

5.20 ANIMAL RESCUE & PROTECTION

OUTCOME: To reduce the direct impact on animals affected by the construction activities.

Any animals (including snakes, tortoises and lizards) directly threatened by the clearing or construction activities should be removed to a safe location outside of the construction area by the ECO or other suitably qualified/experienced person.

All trenches and open excavations should be inspected on a daily basis (first thing in the morning) for any trapped fauna (particularly small mammals and reptiles). These should be removed to a safe location outside of the construction area by the ECO or other suitably qualified / experienced person.

5.21 RE-VEGETATION & HABITAT RESTORATION

OUTCOME: To restore habitat disturbed during construction activities.

A re-vegetation and habitat restoration plan must be developed and will form an integral part of this EMPr.

The Re-vegetation and Habitat Restoration Plan must include the following key objectives.

Certain of the overarching principles and actions in this section are also contained in other sections of this EMPR, but have been reiterated here to ensure easy referencing.

5.21.1 Topsoil management

Effective topsoil management is a critical element of rehabilitation, particularly in arid and semi-arid areas where soil properties are a fundamental determinant of vegetation composition and abundance. Although some parts of the site consist of exposed bedrock, most parts of the site have at least some topsoil. Where any excavation or topsoil clearing is required, the topsoil should be stockpiled and later used to cover cleared and disturbed areas once construction activity has ceased. The following actions are required for effective topsoil management.

- Topsoil is the top-most layer (0-25cm) of the soil in undisturbed areas. This soil layer is important as it contains nutrients, organic matter, seeds, micro-organisms fungi and soil fauna. All these elements are necessary for soil processes such as nutrient cycling and the growth of new plants. The biologically active upper layer of the soil is fundamental in the maintenance of the entire ecosystem.
- Topsoil should be retained on site in order to be used for site rehabilitation. The correct handling of the topsoil is a key element to rehabilitation success. Firstly, it is important that the correct depth of topsoil is excavated. If the excavation is too deep, the topsoil will be mixed with sterile deeper soil, leading to reduction in nutrient levels and a decline in plant performance on the soil.
- Wherever possible, stripped topsoil should be placed directly onto an area being rehabilitated. This avoids stockpiling and double handling of the soil. Topsoil placed directly onto rehabilitation areas contains viable seed, nutrients and microbes that allow it to revegetate more rapidly than topsoil that has been in stockpile for long periods.
- If direct transfer is not possible, the topsoil should be stored separately from other soil heaps until construction in an area is complete. The soil should not be stored for a long time and should be used as soon as possible. The longer the topsoil is stored, the more seeds, micro-organisms and soil biota are killed.
- Ideally stored topsoil should be used within a month and should not be stored for longer than three months. In addition, topsoil stores should not be too deep, a maximum depth of 1m is recommended to avoid compaction and the development of anaerobic conditions within the soil.

5.21.2 Mulching

Mulching is the covering of the soil with a layer of organic matter of leaves, twigs bark or wood chips, usually chopped quite finely. The main purpose of mulching is to protect and cover the soil surface as well as serve as a source of seed for revegetation purposes.

- During site clearing the standing woody vegetation should not be cleared and burned, removed or mixed with the soil, but should be cleared separately. The cleared vegetation should be stockpiled and used whole or shredded by hand or machine to protect the soil in disturbed areas and promote the return of indigenous species. Where there is a low shrub or grass layer, this material can be cleared and mixed as part of the topsoil as this will aid revegetation and recovery when it is reapplied.
- Mulch should be harvested from areas that are to be denuded of vegetation during construction activities, provided that they are free of seed-bearing alien invasive plants;
- No harvesting of vegetation may be done outside the area to be disturbed by construction activities;
- Brush-cut mulch should be stored for as short a period as possible, and seed released from stockpiles can also be collected for use in the rehabilitation process.

5.21.3 Seeding

In some areas the natural regeneration of the vegetation may be poor and the application of seed to enhance vegetation recovery may be required. Seed should be collected from plants present at the site and should be used immediately or stored appropriately and used at the start of the following wet season. Seed can be broadcast onto the soil, but should preferably be applied in conjunction with measures to improve seedling survival such as scarification of the soil surface or simultaneous application of mulch.

- Indigenous seeds may be harvested for purposes of re-vegetation in areas that are free of alien or invasive vegetation, either at the site prior to clearance or from suitable neighbouring sites;
- Seed may be harvested by hand and if necessary dried or treated appropriately;
- Seed gathered by vacuum harvester, or other approved mass collection method, from suitable shrubs or from the plant litter surrounding the shrubs must be kept apart from individually harvested seed;
- No seed of alien or foreign species should be used or brought onto the site.

5.21.4 Transplants

Where succulent plants are available or other species which may survive translocation are present, individual plants can be dug out from areas about to be cleared and planted into areas which require revegetation. This can be an effective means of establishing indigenous species quickly, this is however unlikely to be a viable option at the current site as there are few suitable species present, but if the conditions are wet then most species have some probability of surviving.

Plants for transplant should only be removed from areas that are going to be cleared.

- Perennial grasses, shrubs, succulents and geophytes are all potentially suitable candidates for transplant.
- Transplants should be placed within a similar environment from where they came in terms of aspect, slope and soil depth.
- Transplants must remain within the site and may not be transported off the site.
- Some species can also grow from cuttings and branches of many succulent species can be rooted in the field.

5.21.5 Use of soil savers

On steep slopes (unlikely on the Hotazel 2 development site) and areas where seed and organic matter retention is low, it is recommended that soil savers are used to stabilise the soil surface. Soil savers are man-made materials, usually constructed of organic material such as hemp or jute and are usually applied in areas where traditional rehabilitation techniques are not likely to succeed.

- In areas where soil saver is used, it should be pegged down to ensure that it captures soil and organic matter flowing over the surface.
- Soil saver may be seeded directly once applied as the holes in the material catch seeds and provide suitable microsites for germination. Alternatively, fresh mulch containing seed can be applied to the soil saver.

5.21.6 General recommendations

Progressive rehabilitation is an important element of the rehabilitation strategy and should be implemented where feasible.

- Once re-vegetated, areas should be protected to prevent trampling and erosion.
- No construction equipment, vehicles or unauthorised personnel should be allowed onto areas that have been vegetated.
- Where rehabilitation sites are located within actively grazed areas, they should be fenced.
- Fencing should be removed once a sound vegetative cover has been achieved.
- Any runnels, erosion channels or washaways developing after revegetation should be backfilled and consolidated and the areas restored to a proper stable condition.

5.21.7 Concluding Statement

- The most cost-effective way to reduce the cost and effort for rehabilitation is to reduce and minimise the disturbance footprint. If the panel arrays can be constructed without clearing the site, then the amount of rehabilitation required would be low and any cleared areas would quickly become re-vegetated.
- The solar panels and roads within the development represent hard surfaces that will generate a lot of runoff. As a result, effective runoff management is essential as is an effective vegetation cover to prevent widespread erosion across the site. As the majority of the site is gently sloping, the risk of erosion is high and retaining vegetation cover between the rows of panels during construction is strongly recommended.

5.22 ALIEN PLANT MANAGEMENT PLAN

OUTCOME: To manage alien species in compliance with the AIS regulations.

An Alien Vegetation management plan must be developed and is deemed to form an integral part of this EMP.

The following actions must be included in this plan

5.22.1 Alien Species Presence & Abundance on the Hotazel 2.

The Hotazel 2 site is currently very lightly invaded by alien species. The density of alien species within the intact vegetation is generally very low and is restricted to disturbed areas around watering points and kraal sites. Of these several are small prostrate species which are not listed and are not considered a high priority. However, the declared invaders and large woody species are most important due to their negative effects and have also been observed to increase rapidly at some of the already completed solar PV projects in the area and are therefore also likely to increase following construction of the current development. Species which are likely to require specific attention include *Prosopis glandulosa*, *Argemone ochroleuca*, *Datura ferox* and *Xanthium spinosum*. *Prosopis glandulosa* is not likely to become an immediate problem, but may gradually invade areas within or near the facility which receive additional runoff. The other species are likely to respond more quickly and may become a problem even during construction if there is sufficient rainfall.

5.22.2 Recommended Management Practice & Clearing Methods

The following general principles and observations which underlie or impact the alien management plan can be made regarding the likely trajectories of vegetation change at PV facilities during and following construction:

- There is likely to be a progression of alien species presence and abundance at the PV sites over time. Initially, alien species are likely to be a significant and persistent problem due to the high levels of disturbance present at the sites following construction. Most alien species are poor competitors and the lack of indigenous vegetation cover will encourage the growth of alien species. Provided that alien species are controlled in a sensitive manner, a cover of perennial grasses is likely to become well established with a couple of years. This should discourage alien species which, with additional control, should become considerably less conspicuous within 5 years of construction. Some more competitive alien species may become established at this time and alien control strategies may need to be adapted over time to address the new problem species.
- Alien species presence will vary from year to year in terms of abundance, density and the identity of species present. This can be ascribed largely to variation in rainfall timing and amount, which will favour a different suite of species each year. Therefore, occasional outbreaks of certain species is not likely to be cause for concern, whereas a persistent high or increasing abundance of a species is indicative of a species where control may be required.
- Management practices will impact indigenous as well as alien species. The dominant management practice at the PV facilities is likely to be mowing to control vegetation height and fire risk within the facility. Regular mowing encourages the growth of low and creeping forms and discourages tall growth forms. This principle is well demonstrated by garden lawns or sports fields where most alien species or weeds in the lawn can be eradicated simply through regular mowing.
- Even without management intervention the vegetation composition of the facilities will change over time. This is due to the shading effect of the panels and the uneven distribution of runoff from the panels. So even where PV sites have not been cleared, it is likely that the vegetation beneath the panels will stabilise at a relatively low level on account of the shading effect, while the runoff at the leading edge of the arrays will encourage the presence of taller or more dense vegetation, which is problematic as shading of the panels may occur and a high plant biomass poses a fire risk.

Without being too prescriptive as the exact methods and approaches to be used, the following general management actions should be encouraged or strived for:

- Mowing excess vegetation by hand, for example with a weedeater, generates the lowest level of associated disturbance and is identified as the preferred method for vegetation control. However, this is time consuming and more mechanical means such as using a tractor with mower is also considered acceptable.
- There is a target height to which vegetation should be cut. If the vegetation is cut too low, then recovery of the grass layer will be slow and this may encourage erosion and an increase in alien invasion. On the other hand, if the vegetation is not cut low enough, then recovery will be rapid and frequent follow-up control may be required. It is recommended that the target height for vegetation after mowing should be about 10-15cm.
- The maintenance of fire-breaks around the facilities is an important safety control and the roads around the perimeter of the facility should be maintained free of vegetation. This is best achieved by manual clearing. Within the facilities themselves, some vegetation recovery along the internal roads should be considered acceptable.
- Where dense stands of alien species have established that cannot be controlled by manual means, some use of herbicides may be acceptable. However, the associated safety

precautions should be taken with regards to the appropriate application methods as well as the use of personal safety equipment (These are outlined in greater detail below). The best-practice clearing method for each species identified should be used. The preferred clearing methods for most alien species can be obtained from the DWAF Working for Water Website. <http://www.dwaf.gov.za/wfw/Control/>

- The effectiveness of vegetation control varies seasonally and this is also likely to impact alien species. Control early in the wet season will allow species to re-grow and follow-up control is likely to be required. It is tempting to leave control till late in the wet season to avoid follow-up control. However, this may allow alien species to set seed before control and hence will not contribute towards reducing alien species abundance. Therefore, vegetation control should be aimed at the middle of the wet season, with a follow-up event towards the end of the wet season. There are no exact dates that can be specified here as each season is unique and management must therefore respond according to the state and progression of the vegetation.
- Alien management is an iterative process and it may require repeated control efforts to significantly reduce the abundance of a species. This is often due to the presence of large and persistent seed banks. However, repeated control usually results in rapid decline once seed banks become depleted.
- Some alien species such as *Opuntia* (Prickly Pear) and trees such as *Prosopis* (Mesquite) are best individually pulled by hand and in the case of *Opuntia* removed from the site.
- It is expected that regular vegetation control to reduce plant biomass within the PV field will be conducted and that this will be timed so as to coincide with the critical growth phases of the most important alien species. This will significantly reduce the cost of alien management as this should contribute towards the control of the dominant alien species and additional targeted control will be required only for a limited number of species.

5.22.3 General Clearing & Guiding Principles

- Alien control programs are long-term management projects and should include a clearing plan which includes follow up actions for rehabilitation of the cleared area.
- The lighter infested areas should be cleared first to prevent the build-up of seed banks.
- Pre-existing dense mature stands ideally should be left for last, as they probably won't increase in density or pose a greater threat than they are currently.
- Collective management and planning with neighbours may be required in the case of large woody invaders as seeds of aliens are easily dispersed across boundaries by wind or water courses.
- All clearing actions should be monitored and documented to keep track of which areas are due for follow-up clearing.

5.22.4 Clearing Methods

- Different species require different clearing methods such as manual, chemical or biological methods or a combination of both.
- However, care should be taken that the clearing methods used do not encourage further invasion. As such, regardless of the methods used, disturbance to the soil should be kept to a minimum.
- Fire is not a natural phenomenon in the area and fire should not be used for alien control or vegetation management at the site.
- The best-practice clearing method for each species identified should be used. The preferred clearing methods for most alien species can be obtained from the DWAF Working for Water Website. <http://www.dwaf.gov.za/wfw/Control/>

5.22.5 Use of Herbicides for Alien Control

Although it is usually preferable to use manual clearing methods where possible, such methods may create additional disturbance which stimulates alien invasion and may also be ineffective for many woody species which resprout. Where herbicides are to be used, the impact of the operation on the natural environment should be minimised by observing the following:

- Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control.
- All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
- Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of in a suitable site.
- To avoid damage to indigenous or other desirable vegetation, products should be selected that will have the least effect on non-target vegetation.
- Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation.
- The appropriate health and safety procedures should also be followed regarding the storage, handling and disposal of herbicides.

For all herbicide applications, the following guidelines should be followed:

Working for Water: Policy on the Use of Herbicides for the Control of Alien Vegetation.



Figure 3: dense infestation of Stinkblaar (*Datura ferox*) growing at a South African solar PV plant shortly after construction. A large proportion of this invasion could have been avoided if the vegetation beneath the panels had not been cleared as this vegetation would have utilised the water running off the front of the panels and limited the invasion of the *Datura*.

5.22.6 Construction Phase Activities

The following management actions are aimed at reducing soil disturbance during the construction phase of the development, as well as reducing the likelihood that alien species will be brought onto site or otherwise encouraged.

Table 4: Alien vegetation management requirements during the construction phase.

Action	Frequency
The ECO is to provide permission prior to any vegetation being cleared for development.	Daily
Clearing of vegetation should be undertaken as the work front progresses – mass clearing should not occur unless the cleared areas are to be surfaced or prepared immediately afterwards.	Weekly

Where cleared areas will be exposed for some time, these areas should be protected with packed brush, or appropriately battered with fascine work. Alternatively, jute (Soil Saver) may be pegged over the soil to stabilise it.	Weekly
Cleared areas that have become invaded can be sprayed with appropriate herbicides provided that these are such that break down on contact with the soil. Residual herbicides should not be used.	Weekly
Although organic matter is frequently used to encourage regrowth of vegetation on cleared areas, no foreign material for this purpose should be brought onto site. Brush from cleared areas should be used as much as possible. The use of manure or other soil amendments is likely to encourage invasion.	Weekly
Clearing of vegetation is not allowed within 32m of any wetland, 80m of any wooded area, within 1:100 year floodlines, in conservation servitude areas or on slopes steeper than 1:3, unless permission is granted by the ECO for specifically allowed construction activities in these areas.	Weekly
Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material such as building sand or dirty earth-moving equipment.) Stockpiles should be checked regularly and any weeds emerging from material stockpiles should be removed.	Weekly
Alien vegetation regrowth on areas disturbed by construction must be controlled throughout the entire site during the construction period.	Monthly
The alien plant removal and control method guidelines should adhere to best-practice for the species involved. Such information can be obtained from the DWAF Working for Water website.	Monthly
Clearing activities must be contained within the affected zones and may not spill over into demarcated No Go areas.	Daily
Pesticides may not be used. Herbicides may be used to control listed alien weeds and invaders only.	Monthly
Wetlands and other sensitive areas should remain demarcated with appropriate fencing or hazard tape. These areas are no-go areas (this must be explained to all workers) that must be excluded from all development activities.	Daily

5.22.7 Concluding Statement

- As there are some alien species present at the site (around old kraal areas), alien invasion following disturbance at the site is likely to occur relatively quickly. As a result, alien control should begin during the construction phase to ensure that the density and abundance of alien species remains manageable into the operational phase.
- In the short-term, soil disturbance is likely to be the dominant driver of alien invasion at the site. While, in the long-term the distribution of runoff is likely to be a key driver as those areas which receive water will be wetter and likely to contain a higher alien abundance.
- As disturbance is the major initial driver of alien species invasion, keeping the disturbance footprint to a minimum is a key element in reducing alien abundance. Wherever possible, the indigenous vegetation should be left intact as this will significantly reduce the likelihood of alien invasion.

5.23 OPEN SPACE MANAGEMENT

OUTCOME: To manage the undeveloped portions of the footprint to promote ecological diversity.

An open space management plan must be developed and deemed to be an integral part of this EMP.

The solar facility development has been designed to be as concentrated / condensed as possible to keep it as small as is viably possible, and thereby limit the disturbance area associated with its construction and operation. As such, minimal open space areas are included in the development design (the rehabilitated temporary laydown area is likely to be the largest open space within the PV area).

The management of these no-go / 'open space' areas should essentially include the following three actions:

- As no-go open space areas, access through these must be controlled, in order to maintain the integrity of ecological, agriculture and archaeological resources found there. The no-go area demarcation (e.g. danger tape, signage etc.) implanted during pre-construction, must be maintained throughout the construction and rehabilitation phases.
- During the rehabilitation and operation phases alien plant invasion monitoring of these 'open space areas' must be undertaken on a 6-monthly basis and all alien plants found must be destroyed (ring-barking) and/or removed (cut down and herbicide applied).

Any impacts arising from within or associated with the development footprint i.e. erosion or invasion of alien vegetation etc., and entering the open space areas outside the solar facility, must be rectified immediately. The parameter of the solar facility must be monitored on a regular basis to ensure that these impacts are timeously identified and not allowed to re-occur.

6. OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT

The following environmental requirements are to be adopted and implemented during the operation phase:

6.1 PV PANEL MAINTENANCE REQUIREMENTS

OUTCOME: To ensure that PV panel maintenance activities do not directly, nor indirectly result in habitat degradation or pollution of resources.

Due to their nature, once installed, the photovoltaic panels will not require intensive maintenance other than periodic cleaning, greasing of bearings and inspection. The key maintenance activity is the cleaning / washing of the panels in order to remove dust and maintain optimum power generation.

6.1.1 Cleaning of PV Panels

Any rainfall on the solar panels would be welcomed due to its cleaning effect, but as mentioned before, the annual predicted rainfall is very low. Water for cleaning panels should take place using water from lawful sources on site or from the rainwater collection / storage systems. To further reduce the use of water at the solar facility, the use of alternative panel cleaning methods could be investigated. The use of robotic PV cleaners or high-pressure/low volume water cleaners, as well as compressed air can be considered, should the technology become commercially viable and available during the lifespan of the project.

In compliance with the EA, only biodegradable may be used for washing purposes. Care should be taken that the wash-water does not cause any erosion (Please refer to section dealing with washwater management described below).

Indeed, water used in the cleaning process is likely to encourage the growth of natural vegetation around the panel arrays and rows, which will require routine brush-cutting / trimming / mowing to

avoid vegetation shading the panels, interfering with tracking mechanisms or the risk of fires. Under no circumstances should vegetation beneath or around the panel arrays and rows be cleared / removed entirely, as this will result in significant erosion and associated sand-blasting of infrastructure. Due to stunted nature of the xerophytic vegetation, it is unlikely that this will need to be done often. Biomass produced from these trimming activities could be chipped and used as mulch under the PV panels (to increase stormwater infiltration and reduce erosion).

6.1.2 Management of Wash-water

A Stormwater, Erosion and Washwater Management Plan is attached in Appendix B and is deemed to form an integral part of this EMPr

After construction, the washing of the solar panels once every quarter is likely to cause nominal additional run-off. The overall effect on the natural water courses is expected to be very low, due to the high evaporation potential and low rainfall of the area. No chemicals will be used to clean the panels, only water. If required, a biodegradable soap may be used.

6.1.3 Other Operation / Maintenance Requirements

- Lubricants used to grease bearing of panel tracking systems should be conservatively used to avoid leakage or spills. Any **leaks or spills** that occur during maintenance operations must be cleaned up immediately and the contaminated soil / material disposed on at a registered disposal site for hazardous materials.
- The **tracks / pathways** between the PV panel rows used for cleaning and maintenance of the panels, should be maintained as single tracks and regularly brush-cut and/or mowed to allow reasonable access.
- **Access roads and the internal road network** must be maintained in a condition that allows for reasonable access and minimised erosion potential. All drainage, stormwater management and erosion control structures must be maintained to ensure their proper functioning.
- **Regular monitoring for erosion** to ensure that no erosion problems are occurring at the site as a result of the roads and other infrastructure. All erosion problems observed should be rectified as soon as possible.
- All maintenance vehicles to remain on the demarcated roads.
- The **septic tank**, associated with the ablution facilities at the on-site sub-station / maintenance buildings, must be maintained in full working condition.
- The **perimeter security fence** should be routinely patrolled to ensure that it still allows for the passage of small and medium sized mammals, at least at strategic places, and that the electrified strands are not causing animal electrocution.
- No unauthorized persons should be allowed onto the site.
- The **maintenance of the transmission line infrastructure** must retain the bird-friendly design features (bird-flappers and insulation). Any **bird electrocution and collision events** that occur should be recorded, including the species affected and the date. If repeated collisions occur within the same area, then further mitigation and avoidance measures may need to be implemented.
- Staff present during the operational phase should receive environmental education so as to ensure that that **no hunting, killing or harvesting of plants and animals** occurs.
- All **alien plants present at the site should be controlled** at least twice a year using the best practice methods for the species present.
- **Bare soil should be kept to a minimum**, and at least some grass or low shrub cover should be encouraged under the panels.
- **No pets** (cats and dogs) should be allowed within the solar facility.

6.2 OPERATION WASTE MANAGEMENT

The following items are to be implemented with regard to waste management during the operational phase of the project.

6.2.1 Litter management

Wind and scavenger proof bins must be installed at the maintenance / control buildings and on-site substation and must be emptied on a weekly basis.

6.2.2 Scrap Metal

Recycling of scrap metal is recommended. Scrap metal must be disposed of off-site at suitable facilities.

6.2.3 Hazardous Waste

All hazardous waste (including bitumen, fuel, oils, paints etc.) used during the operation and maintenance of the solar facility shall be disposed of at an approved/registered hazardous-waste landfill site. The Contractor shall provide disposal certificates to the Site Manager.

Used oil and grease must be removed from site to an approved used oil recycling company.

Under NO circumstances may any hazardous waste be spoiled on the site.

The servicing of operation/maintenance vehicles should take place off-site.

6.3 PLANT RESCUE AND PROTECTION.

OUTCOME: To reduce the impact on the botanical features during operation.

A Plant rescue and protection plan must be developed. The following actions must be adopted for the operational phase of the project lifecycle.

- Access to the site should be strictly controlled and all personnel entering or leaving the site should be required to sign and out with the security officers.
- The collecting of plants or their parts should be strictly forbidden and signs stating so should be placed at the entrance gates to the site.

6.4 ALIEN VEGETATION MANAGEMENT

An Alien Vegetation Management Plan must be developed.

The following management actions are aimed at reducing the abundance of alien species within the site and maintaining non-invaded areas clear of aliens.

Table 5: Alien vegetation management requirements during operation.

Action	Frequency
Surveys for alien species should be conducted regularly. Every 6 months for the first two years after construction and annually thereafter. All aliens identified should be cleared.	Every 6 months for 2 years and annually thereafter
Where areas of natural vegetation have been disturbed by construction activities, revegetation with indigenous, locally occurring species should take place where the natural vegetation is slow to recover or where repeated invasion has taken place following disturbance.	Biannually, but revegetation should take place at the start of the rainy season
Areas of natural vegetation that need to be maintained or managed to reduce plant height or biomass, should be controlled using methods that leave the soil protected, such as using a weed-eater to mow above the soil level.	When necessary
No alien species should be cultivated on-site. If vegetation is required for aesthetic purposes, then non-invasive, water-wise locally-occurring species should be used.	When necessary

7. CLOSURE & DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT

After the lifespan of the facility (20-25 years), there is a possibility that the entire facility will be decommissioned and closed (although other options for continuation may be investigated)

Appendix 5 of Regulation 982 of the 2014 EIA Regulations contains the required contents of a Closure Plan. The table below shows the minimum requirements for a closure plan. The operating entity for this facility must ensure that the closure plan complies with these requirements as well as any other legislative requirements that may come into effect during the lifecycle of the project.

Table 6: Legislative requirements for a closure plan.

Requirement
(1) A closure plan must include -
(a) Details of - (i) The EAP who prepared the closure plan; and (ii) The expertise of that EAP.
(b) Closure objectives.
(c) Proposed mechanisms for monitoring compliance with and performance assessment against the closure plan and reporting thereon.
(d) Measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development including a handover report, where applicable.
(e) Information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity.
(f) A description of the manner in which it intends to – (i) Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure; (ii) Remedy the cause of pollution or degradation and migration of pollutants during closure. (iii) Comply with any prescribed environmental management standards or practises; or (iv) Comply with any applicable provisions of the Act regarding closure.
(g) Time periods within which the measure contemplated in the closure plan must be implemented.
(h) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of closure.
(i) Details of all public participation processes conducted in terms of regulation 41 of the Regulation, including – (i) Copies of any representations and comments received from registered interested and affected parties; (ii) A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; (iii) The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants; (iv) Where applicable, an indication of the amendments made to the plan as a result of public participation processes conducted in terms of regulation 41 of these Regulations.

Requirement
(j) Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts.

Within a period of at least 12 months prior to the planned closure and decommissioning of the site a Closure Plan must be prepared and submitted to the Local Planning Authority (Joe Moralong Municipality), as well as the Provincial and National Environmental Authorities (the Northern Cape Department of Environmental Affairs & Nature Conservation (DEANC) and the Department of Environment, Forestry and Fisheries for input and approval. This plan must provide detail pertaining to site restoration, soil replacement, landscaping, pro-active conservation, and a timeframe for implementation. Furthermore, Plan must comply with any additional legislation and guidelines that may be applicable at the time.

Two possible scenarios are considered for this decommissioning phase, as follows:

7.1 SCENARIO 1: TOTAL CLOSURE & DECOMMISSIONING OF SOLAR FACILITY

If the decision is taken at the end of the project lifespan (30-years) to totally decommission the solar facility i.e. make the land available for an alternative land use, a closure plan as detailed above should be developed and should include provision for the following:

- All concrete and solar infrastructure etc. must be removed from the solar site i.e. panels, support structures etc.;
- The holes where the panel support structures are removed must be levelled and covered with subsoil and topsoil;
- Tracks that are to be utilised for the future land use operations should be left in-situ. The remainder of the tracks to be removed (ripped), topsoil replaced and brush-packed to encourage re-vegetation and minimise erosion;
- All auxiliary buildings and access points should be demolished and rubble removed, unless they can be used for/by the future land use. The competent authority may prescribe that the landscaping and underground infrastructure i.e. foundations be left *in situ*;
- The underground electric cables must be removed, if they cannot be used in the future land use;
- All material (cables, PV Panels etc.) must be re-used or recycled wherever possible. Functional panels that still produce sufficient output could be donated to local rural schools and clinics upon facility closure and decommissioning;
- The disturbed portions of the site must be brush-packed, replanted and/or seeded with locally sourced indigenous vegetation (as prescribed by the competent authorities) to allow re-vegetation and rehabilitation of the site (see plant species list attached);
- Discontinuation of Lease and Easement Agreements for main land and access roads;
- Consider whatever is economically or socially beneficial and risky for the project's Owners and other Stakeholders at this last stage
 - This could include selling equipment on secondary market, recycling of metals and modules as scrap, using some or all of the proceeds to pay the local labour for uninstallation work, etc?
 - PV leaves no pollution and the equipment other than the modules which should be reused or recycled (There is an existing market for this).

7.2 SCENARIO 2: PARTIAL DECOMMISSIONING / UPGRADE OF SOLAR FACILITY

Due to low variable costs and loans repaid long ago, any owner the facility may be interested in prolonging technical, functional, legal and economic lives of the plans for as long as possible, even beyond Power Purchase Agreement.

- This will require disposal of assets with shorter technical lives are critical (inverters, etc). PV modules, substructures, cables have a lifespan that should be longer than 25 years;
- Under this option, the O&M contractor will have to ensure that the validity period of all licences / permits and agreements is extended where necessary and that any legislation that has subsequently been promulgated is considered.

Should more advanced technology become available it may be decided to continue to use the site as a renewable energy / photovoltaic / solar facility. Should this be the case, it is likely that much of the existing infrastructure will be re-used in the upgraded facility.

All infrastructure that will no longer be required for the upgraded facility must be removed as described in Scenario 1 above. The remainder of the infrastructure should remain in place or upgraded depending on the requirements of the new facility. As described for Scenario 1 above, the function PV panels that are still capable of producing sufficient output, could be donated to local schools and clinics. Any upgrades to the facility at this stage must comply with relevant legislation and guidelines of the time.

8. SPECIALIST MITIGATIONS AND MANAGEMENT

The table below reflects the mitigation and management measures suggested by specialists during the environmental process for Hotazel 2. The EPC and O&M contractor must ensure compliance with these requirements.

Mitigation	Construction Phase	Operational Phase	Decommissioning Phase
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓	✓	✓
As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.	✓		
Avoid sensitive features and habitats when locating infrastructure	✓		
No mass clearing of vegetation for the PV arrays should be allowed. Vegetation to be brush cut and only in exceptional circumstances completely cleared.	✓		
Compile a Rehabilitation Plan	✓	✓	✓
Compile an Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas.	✓	✓	✓
Where possible, access roads should be located along existing farm, access and district roads	✓		
Access to sensitive areas outside of development footprint should not be permitted during construction.	✓		
Undertake monitoring to evaluate whether further measures would be required to manage impacts.	✓	✓	
Undertake a biodiversity walkthrough of the site prior to construction.	✓		
A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads.	✓		
If possible, plants should be conserved in situ, along with an appropriate buffer zone around them	✓		
Plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect	✓		
A Plant Rescue Plan must be compiled to be approved by the appropriate authorities.	✓		
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓		
No speeding on access roads – install speed control measures, such as speed humps, if necessary	✓		
No hunting of protected species.	✓		
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species.	✓		
Report any sightings to conservation authorities	✓	✓	

Mitigation	Construction Phase	Operational Phase	Decommissioning Phase
Undertake dust fall-out monitoring and manage, where necessary	✓		
Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. This should include any areas within proximity to the project that may be affected by the project, or that could have an influence on invasion by alien invasive plants into the property	✓	✓	
Undertake regular monitoring to detect alien invasions early so that they can be controlled.	✓	✓	
Avoid development of designated sensitive habitats	✓		
Appropriate lighting should be installed to minimize impacts on nocturnal animals.	✓	✓	
Construction activities should not be undertaken at night.	✓		
Compile and implement a stormwater management plan, which highlights control priorities and areas and provides a programme for long-term control	✓		
Undertake regular monitoring to detect erosion features early so that they can be controlled	✓	✓	
Avoid building on or near steep or unstable slopes.	✓		
No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities		✓	
Additional infrastructure to be located adjacent to existing infrastructure		✓	
No driving of vehicles off-road		✓	
No illegal collecting of any individual fauna or flora	✓	✓	
No hunting of protected species or hunting of any other species without a valid permit.	✓	✓	
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species	✓	✓	
Activity should as far as possible be restricted to the footprint of the infrastructure.	✓		✓
Measures to control noise and dust should be applied according to current best practice in the industry.	✓		✓
Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.	✓		✓
Access to the rest of the property must be restricted.	✓		
A single perimeter fence should be used .		✓	
With regards to the infrastructure within the substation yard and inverter station, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.		✓	
Implementation of a chance find procedure	✓		
Investigate the possibility of undertaking screening	✓		
Plan to maintain the height of structures as low as possible:	✓		
Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development	✓		
Reinstate any areas of vegetation that have been disturbed during construction	✓		
Remove all temporary works		✓	
Monitor rehabilitated areas post-construction and implement remedial actions:		✓	
Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.		✓	
Remove infrastructure not required for the post-decommissioning use of the site			✓
All alien plant re-growth must be monitored and should these alien plants reoccur these plants should be re-eradicated. The scale of the development does however not warrant the use of a Landscape Architect and / or Landscape Contractor.	✓		
It is further recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset to ensure a net benefit to the environment within all areas that will remain undisturbed.	✓	✓	
Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off	✓		
Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be included in the EMP to mitigate these impacts.	✓		
Any stormwater within the development area must be handled in a suitable manner, i.e. separate clean and dirty water streams around the plant, and install stilling basins to capture large volumes of run-off, trap sediments and reduce flow velocities (e.g. water used when washing the PV Panels).	✓	✓	

Mitigation	Construction Phase	Operational Phase	Decommissioning Phase
Suitable stormwater management features with erosion control measures (gabions) should also be installed in areas where concentrated flows are anticipated	✓		
Strict use and management of all hazardous materials used on site.	✓		
Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / banded areas	✓		
Containment of all contaminated water by means of careful run-off management on site.	✓		
Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated water courses or the buffers shown	✓		
Strict control of the behaviour of construction workers.	✓		
Appropriate waste management	✓		
Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced.	✓		
Installation of proper Erosion control, and drainage on the access road.	✓		
Dust control on the access road during construction.	✓		
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature. Existing road alignments are followed and roads upgraded for use during the live span of facility. With the appropriate planning, the same live style can be achieved during the lease period of the facility from the land so occupied by the facility.	✓		
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.	✓		
Ensure that most infrastructure features are erected on transformed or non-arable land. Implement stormwater management as an integral part of planning and as a guideline for the positioning of structures. Use existing roads and conservation structures to the maximum in the planning and operation phases. Rehabilitate disturbed areas as soon as possible after construction.	✓		
Erosion and sediment control with proper water run-off control planning.	✓		
Appropriate handling and storage of chemicals and hazardous substances and waste should be done.	✓		
When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.	✓		
Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.	✓		
Establish structures on the contour. Use grass strips to regulate flow speed	✓		
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.	✓		
Before the construction phase commences the proponent should meet with representatives from the JMLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.	✓		
Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.	✓		

Mitigation	Construction Phase	Operational Phase	Decommissioning Phase
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.	✓		
The JMLM in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.	✓		
Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;	✓		
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local JMLM Councillor for Ward 2, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers;	✓	✓	
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;	✓	✓	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area;	✓		
The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.	✓		
Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks;	✓		
The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end;	✓		
It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.	✓		
The proponent should implement a policy that no employment will be available at the gate.	✓		
The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;	✓		
The proponent must enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences;	✓		
Traffic and activities should be strictly contained within designated areas	✓		
Strict traffic speed limits must be enforced on the farm	✓		
All farm gates must be closed after passing through	✓		
Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties	✓		
The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below)	✓		
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested	✓		
Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.	✓		

Mitigation	Construction Phase	Operational Phase	Decommissioning Phase
Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation	✓		
The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated;	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;	✓		
Smoking on site should be confined to designated areas;	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle;	✓		
Contractor to provide fire-fighting training to selected construction staff	✓		
Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.	✓		
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase;	✓		
All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO	✓		
Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members; Maximise opportunities for local content, procurement and community shareholding	✓		
The JMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed so as to promote and support local, socio-economic development in the region as a whole.	✓		
The JMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the GLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager	✓		
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;	✓		
Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.	✓		
The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.	✓		
All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning	✓		
Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.	✓		
Stagger component delivery to site .	✓		✓
Reduce the construction period	✓		✓
The use of mobile batch plants and quarries in close proximity to the site	✓		✓
Staff and general trips should occur outside of peak traffic periods.	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase	✓		✓
Dust Suppression of gravel roads during the construction phase, as required.	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase	✓		✓

9. MONITORING AND AUDITING

Environmental monitoring and audits are fundamental in ensuring the implementation of the management actions contained within this EMP, environmental sustainable development and maintenance of Hotazel 2.

To promote transparency and cooperative governance, the results of relevant audits should be submitted to:

- The operators of the facility;
- The local authority (Joe Morolong Municipality);
- The provincial environmental authority: Department of Environmental Affairs & Nature Conservation (DENC);
- The national environmental authority: (DEFF); and
- Eskom.

The results of the audit must be recorded in an environmental audit report and any non-compliance must be formally recorded, along with the response-action required or undertaken. Each non-compliance incident report must be issued to the relevant person(s), so that the appropriate corrective and preventative action is taken within an agreed upon timeframe.

Appendix 7 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Audit Report. The table below shows the legislated requirements of an audit reports, and all relevant environmental audits undertaken as part of this development (during construction and operation) should comply with these requirements.

Table 7: Contents of an audit report

(1) An Environmental audit report prepared in terms of these Regulations must contain:
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.
(b)Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.
(c) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.
(d) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.
(e) A description of the methodology adopted in preparing the environmental audit report.
(f) An indication of the ability of the EMP, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMP, and where applicable, the closure plan.
(g) A description of any assumptions made, and any uncertainties or gaps in knowledge.
(h) A description of an consultation process that was undertaken during the course of carrying out the environmental audit report.
(i) A summary and copies of any comments that were received during any consultation process
(j) Any other information requested by the competent authority.

9.1 ECO CONSTRUCTION MONITORING

The ECO is responsible for environmental monitoring during construction as per the requirements of this EMPr. The monthly environmental monitoring reports compiled by the ECO, as well as the photographic record of works, must be submitted to the operators of the facility, the local authority, the provincial environmental authority, the national environmental authority and Eskom.

9.2 RECORDING AND REPORTING TO THE DEFF.

The following recording and reporting requirements are required:

- The holder of the authorisation must keep all records relating to monitoring and auditing on site and make it available for inspection to any relevant and competent authority in respect of this development.
- All documentation, such as Audit/monitoring/compliance reports and notifications required to be submitted to the department in terms of the EA, must be submitted to the Director: Compliance monitoring.

9.3 ENVIRONMENTAL AUDIT REPORT

The holder of the EA must submit an environmental audit report to the department within 30 days of completion of the construction phase (i.e. within 30 Days of site handover) and within 30 days of completion of rehabilitation activities.

This environmental audit report must:

- Be compiled an independent environmental auditor;
- Indicate the date of the audit, the name of the auditor and the outcome of the audit;
- Evaluate compliance with the requirements of the approved EMPr and the Environmental Authorisation;
- Include measures to be implemented to attend to any non-compliances or degradation noted;
- Include copies of approvals granted by other authorities relevant to the development for the reporting period;
- Highlight any outstanding environmental issues that must be addressed, along with recommendations for ensuring these issues are appropriately addressed;
- Include a copy of the EA and the approved EMPr;
- Include all documentation such as waste disposal certificates, hazardous waste landfill site licences etc, pertaining to this authorisation; and
- Include evidence of adherence to the conditions of this authorisation and the EMPr where relevant such as training records and attendance registers.

Further to these requirements, this audit report must also comply with the requirements of an audit as highlighted in Annexure 7 of R982 and included in Table 7 above.

9.4 PLANT RESCUE MONITORING REQUIREMENTS

A plant rescue and protection must be developed and must form part of the EMPr. The following reporting and monitoring requirements are recommended to form part of the plant rescue and protection plan:

- Preconstruction walk-through report detailing the location and distribution of all listed and protected species. This should include a walk-through of all infrastructure including all new access roads, PV array areas, underground cables, power line routes, buildings and substations. The report should include recommendations of route adjustments where necessary, as well as provide a full accounting of how many individuals of each listed species will be impacted by the development.

- Monitoring during construction by the ECO to ensure that listed species and sensitive habitats are avoided. All incidents should be recorded along with the remedial measures implemented.
- Post construction monitoring of plants translocated during search and rescue to evaluate the success of the intervention. Monitoring for a year post-transplant should be sufficient to gauge success.

9.5 HABITAT RESTORATION MONITORING REQUIREMENTS

A habitat restoration plan must be developed and form part of the EMPr.

As rehabilitation success, particularly in arid areas is unpredictable, monitoring and follow-up actions are important to achieve the desired cover and soil protection.

- Re-vegetated areas should be monitored every 4 months for the first 12 months following construction.
- Re-vegetated areas showing inadequate surface coverage (less than 20% within 12 months after re-vegetation) should be prepared and re-vegetated;
- Any areas showing erosion, should be re-contoured and seeded with indigenous grasses or other locally occurring species which grow quickly.

9.6 ALIEN VEGETATION MONITORING DURING THE CONSTRUCTION PHASE

An alien vegetation management must be developed and form part of the EMPr.

The following monitoring actions should be implemented during the construction phase of the development.

Table 8: Alien vegetation monitoring requirements during the construction phase.

Monitoring Action	Indicator	Timeframe
Document alien species present at the site	List of alien species	Preconstruction
Document alien plant distribution	Alien plant distribution map within priority areas	3 Monthly
Document & record alien control measures implemented	Record of clearing activities	3 Monthly
Review & evaluation of control success rate	Decline in documented alien abundance over time	Biannually

9.7 ALIEN VEGETATION MONITORING DURING THE OPERATIONAL PHASE

The following monitoring and evaluation actions should take place during the operational phase of the development.

Table 9: Alien vegetation monitoring requirements during the operational phase

Monitoring Action	Indicator	Timeframe
Document alien species distribution and abundance over time at the site	Alien plant distribution map	Biannually
Document alien plant control measures implemented & success rate achieved	Records of control measures and their success rate.	Biannually

	A decline in alien distribution and cover over time at the site	
Document rehabilitation measures implemented and success achieved in problem areas	Decline in vulnerable bare areas over time	Biannually

10. METHOD STATEMENTS

Method statements are written submissions by the Contractor to the Engineer and ECO in response to the requirements of this EMP or in response to a request by the Engineer or ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects.

The Contractor shall not commence the activity for which a method statement is required until the Engineer and ECO have approved the relevant method statement.

Method statements must be submitted at least five (5) working days prior to the proposed date of commencement of the activity. Failure to submit a method statement may result in suspension of the activity concerned until such time as a method statement has been submitted and approved.

An approved method statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. However, **any damage caused to the environment through activities undertaken without an approved method statement shall be rehabilitated at the contractor's cost.**

Additional method statements can be requested at the ECO's discretion at any time during the construction phase.

The method statements should include relevant details, such as:

- Construction procedures and location on the construction site;
- Start date and duration of the specific construction procedure;
- Materials, equipment and labour to be used;
- How materials, equipment and labour would be moved to and from the development site, as well as on site during construction;
- Storage, removal and subsequent handling of all materials, excess materials and waste materials;
- Emergency procedures in case of any potential accident / incident which could occur during the procedure;
- Compliance / non-compliance with an EMP specification and motivation for proposed non-compliance.

10.1 METHOD STATEMENTS REQUIRED

Based on the specifications in this EMP, the following method statements are likely to be required as a minimum (more method statements may be requested at any time as required under the direction of the ECO):

- Vegetation clearing & topsoil stripping, and associated stockpiling;
- Hazardous substances declaration of use, handling and storage – e.g. for fuels, chemicals, oils and any other harmful / toxic / hazardous materials;
- Cement and concrete batching;
- Traffic, transport & delivery accommodation e.g. need for traffic diversion/turning circles etc.;
- Solid waste management / control procedures;

- Stormwater and wastewater management / control systems;
- Erosion remediation and stabilisation;
- Fire control and emergency procedures;
- Job site security plan;
- Blasting activities (if necessary);
- Ramming and jack hammering;
- Re-vegetation, rehabilitation and re-seeding.

11. HEALTH AND SAFETY

The Occupational Health and Safety Act (No. 85 of 1993) aims to provide for / ensure the health and safety of persons at work or in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.

The main Contractor must ensure compliance with the Occupational Health and Safety Act, as well as that all subcontractors comply with the Occupational Health and Safety Act.

The following is of key importance (Section 8 of the aforesaid Act):

General duties of employers to their employees

(1) Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.

(2) Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular-

(a) the provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable, are safe and without risks to health;

(b) taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety or health of employees, before resorting to personal protective equipment;

(c) making arrangements for ensuring, as far as is reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage or transport of articles or substances;

(d) establishing, as far as is reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as is reasonably practicable, further establish what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;

(e) providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees;

(f) as far as is reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures contemplated in paragraphs (b) and (d), or any other precautionary measures which may be prescribed, have been taken;

(g) taking all necessary measures to ensure that tire requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used;

- (h) enforcing such measures as may be necessary in the interest of health and safety;*
- (i) ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented; and*
- (j) causing all employees to be informed regarding the scope of their authority as contemplated in section 37 (1) (b).*

12. CONTRACTORS CODE OF CONDUCT

The Contractor's Code of Conduct is a document to be drawn up by the solar facility Developer and provided to all contractors or subcontractors that undertake any service on site. This code of conduct should include generic conduct rules for construction and operation activities on Hotazel 2 and must be signed by all contractors. **This code of conduct does not exonerate contractors from complying with this EMPr and must not be viewed as a stand-alone document.**

The following general template is suggested for this Code of Conduct document and must be adapted and updated to include the provisions of this EMPr, recommendations of participating specialists, conditions of approval of the Environmental Authorisation, conditions imposed by the Local Authority (as part of the rezoning and consent use), as well as the all service agreements.

12.1 OBJECTIVES

To ensure compliance with the Conditions of the Environmental Authorisation, the Environmental Management Programme (EMPr), recommendations of participating specialists, conditions imposed by the Local Authority as part of the rezoning and subdivision, as well as the service agreements.

- To ensure the least possible damage to:
 - Existing infrastructure on and adjacent to the site;
 - Indigenous flora and fauna (biophysical environment); and
 - Water quality of surface and groundwater on and surrounding the site;
- Construction and development are undertaken with due consideration to all environmental factors;
- Where such damage occurs, provision is made for re-instatement and rehabilitation;

12.2 ACCEPTANCE OF REQUIREMENTS

In order to achieve these objectives, the Developer and Contractor bind themselves jointly and severally to fulfil and comply with all the obligations contained herein, as well as prescriptions and obligations contained in other documents controlling the development of Hotazel 2.

12.3 CONTRACTOR'S PRE-CONSTRUCTION OBLIGATIONS

Contractors may not commence any construction on Hotazel 2 until:

- The Contractor and the ECO have carried out a joint site inspection (this is to be done as part of the pre-construction compliance workshop as detailed in the EMPr);
- A qualified ecologist has undertaken an inspection of the final development footprint and determined the number, species and extent of protected / listed plant species within this area ;
- A permit for the removal or relocation-and-transplant of these protected / listed plant species has been obtained from the Kimberly office of the Northern Cape Department of Environmental Affairs & Nature Conservation (DEANC);
- Search and rescue of sensitive plants, within the development footprint has been carried out in compliance with the plant rescue and protection plan and signed off by the ECO (where this is necessary);

- The construction and no-go areas are suitably demarcated to the satisfaction of the ECO;
- Where necessary, approval of Building / Construction Plans has been obtained from the local authority (Joe Morolong Municipality); and
- All contract staff have attended the required environmental induction training and on-going environmental education sessions, as necessary.

12.4 CONTRACTOR'S OBLIGATIONS DURING CONSTRUCTION

- The Contractor is required to comply with the necessary Health and Safety requirements as required by the Occupational Health and Safety Act of 1993;
- The Contractor must comply with the construction requirements as detailed in the EMPr, including the following plans detailed therein:
 - Transport & Traffic Management Plan,
 - Stormwater and Erosion-Control Management Plan,
 - Vegetation Clearing & Plant Rescue Plan (to be developed),
 - Re-vegetation & Rehabilitation Plan (to be developed),
 - Alien Management Plan (to be developed),
 - Open Space Management Plan (to be developed);
- The contractor must comply with all the requirements detailed in the Environmental Authorisation;
- All conditions, processes and fees as prescribed by the Local Authority must be complied with; and
- The Contractor shall only be permitted to erect a single signboard which must comply with legislative requirements.

13. SITE DEVELOPMENT PLAN

The Site Development Plan (SDP) is attached in Appendix A of this EMPr. Approval of this EMPr infers approval of the SDP. The holder of the EA and the contractor must ensure that all works are undertaken in approximation to the SDP. Should there be any dispute on any aspect of the works in relation to the SDP, the ECO must make ruling, which should be referred to the CA if necessary.

The table below shows the key components as defined in the SDP and the EMPr applicability of each of these component's.

Table 10: EMPr Sections applicable to SDP Components

SDP Component	EMPr Applicability
Construction Road	Sections 4, 5, 6,7 & 8
Perimeter Road	Sections 4, 5, 6,7 & 8
Internal Roads	Sections 4, 5, 6,7 & 8
Access Road	Sections 4, 5, 6,7 & 8
Perimeter Fencing	Sections 5
PV Panels	Sections 4, 5, 6,7 & 8
Inverter Stations	Sections 4, 5, 6,7 & 8
AC Cabling	Sections 4 & 5,
Sub-Station	Appendix E
Monitoring Building	Sections 4 & 5
Laydown Area	Section 5

Evacuation Line	Appendix D
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14. IMPLEMENTATION

The following table is provided to assist the developer, design team, engineer and contractor with the effective implementation of this EMPr. The table below serves as a quick reference guide to the EMPr, but must be read in conjunction with the entire document.

Item	Management Action	Timing	Responsible Party	Monitoring
Design & Pre-Construction Phase				
Familiarisation with the contents of the EMPr & EA.	Attendance of a pre-construction environmental compliance workshop	Prior to commencement of site clearing & earthworks.	ECO, Engineers, Contractor & Project Management.	ECO to include details of this in the first environmental control Report.
	Environmental induction of all staff.	Prior to commencement of earthworks.	ECO and all contract staff.	Contractor to keep records of all staff attending inductions.
Demarcation of Development Areas and No-Go Areas.	All areas outside of the construction / development area to be clearly demarcated. All areas outside the construction area are considered no-go.	Prior to commencement of site clearing & earthworks.	Contractor with input from the Engineer, ECO and participating specialists where necessary. Contractor responsible for maintaining demarcation throughout the construction phase.	ECO to maintain photographic record of demarcation.
Obtain Permit for removal / translocation of protected plant species.	Permit application to be informed by list of protected plant species found by the ecological specialist within the final facility development footprint. Permit requirements & list to inform updated plant rescue plan.	Prior to plant rescue and vegetation clearing.	ECO, ESA, Ecological Specialist & Contractor	ECO & Ecological specialist to provide photographic record of protected plant species (to be used in on-going Environmental Education) and of plant rescue & translocation operation.
Panel and Powerline Pylon siting / walk down	As defined in the EMPr	Prior to finalisation of detailed design.	Developer with input from ECO, Engineer and relevant participating specialists	ECO to include details in monthly reports.
Environmental Induction Training	As defined in the EMPr	Prior to commencement of site clearing & earthworks.	ECO & Contractor	Contractor to provide details to ECO. ECO to provide details in monthly reports.
Construction Phase				
Minimise impact of construction vehicles	Implementation of recommendations of Transport & Traffic Plan defined in EMPr.	Throughout construction phase	Contractor	Engineer
Prevent concrete contamination	Use of delivered ready-mix concrete. Control at batching sites	Throughout construction phase	Contractor	Engineer, ESA and ECO.
Prevention of erosion of cable trenches	Implementation of recommendations of Erosion Management Plan defined in EMPr.	During detailed design and throughout the construction phase.	Contractor	Engineer, ESA and ECO.

Item	Management Action	Timing	Responsible Party	Monitoring
Protection of Archaeological Resources	Report archaeological occurrences found during earthworks to NCHRA & SAHRA.	Demarcation of sites prior to commencement of earthworks. Other mitigations throughout the construction phase.	Contractor	ESA, ECO & archaeologist.
Protection of hydrological resources (surface & underground).	As per the requirements of the EMPr.	Throughout the construction phase.	Contractor	ECO
Protection of all topsoil resources on site.	As per the requirements of the EMPr i.e. brush/straw packing & re-seeding	Throughout the construction phase.	Contractor	ECO
Construction of Cable Trenches	As per the requirements of this EMPr.	Throughout the construction phase	Contractor	ECO
Limiting damage caused by the installation of overhead lines.	As per the requirements of this EMPr.	Design phase and throughout the construction phase.	Design Team & Contractors	ECO & ER
Limiting Noise Impact	As per the requirement of the EMPr.	Design, throughout the construction and operation phase	Contractor, ER	ECO & ER
Reduction of dust generation as a result of construction activities.	As per the requirements of the EMPr. Do not strip topsoil from entire development footprint	Throughout the construction phase	Contractor	ECO & ER.
Providing for effective ecological corridors	Implementing the fencing requirements as defined by the ecological specialist and this EMPr.	Design and construction phases.	ER & Contractor	ECO & ER.
Limit environmental damage from blasting, drilling, jackhammering and trenching activities including that on existing boreholes.	Implementing the requirements for blasting detailed in this EMPr.	Throughout the construction phase.	Contractor	ECO & ER.
Preventing of Erosion and siltation.	Implementation of Stormwater Management and Erosion Control Measures detailed in this EMPr, as well as those made by the ecological specialists.	Design phase and throughout the construction phase	Design Team, Engineer and Contractors	ECO & ER.

Item	Management Action	Timing	Responsible Party	Monitoring
Protection of protected plant species and on-going re-vegetation & rehabilitation.	Implementation of Plant Rescue, Re-vegetation & Rehabilitation Plan, as well as recommendation of ecological specialist.	Design phase and throughout the construction phase.	Design Team, Engineer and Contractors	ECO & ER.
Prevention of theft and other crime.	Development of a job site security plan.	Before commencement of construction.	Contractor	ER
On-going Environmental Education	As defined in the EMPr.	During construction.	ECO & Contractor	Contractor to provide details to ECO. ECO to provide details in monthly reports.
Prevent pollution resulting from oil and fuel storage and handling.	Implement correct fuel and oil handling procedures. Implement emergency spill response plan.	Duration of the project lifespan.	ECO & Contractor	ECO, ER & Contractor
Operational Phase				
Prevent pollution resulting from oil and fuel storage and handling.	Implement correct fuel and oil handling procedures. Implement emergency spill response plan.	Duration of the project lifespan	Facility operator	Facility manager and Environmental Authority.
Manage vegetation growth	Trimming of vegetation under panels to avoid overshadowing and fire risk.	Throughout operation	Operation & Maintenance staff.	Operation staff to report to Operator.
Prevent & manage erosion	Regular monitoring of wash to remove obstructions and repair erosion.	Throughout operation	Operation & Maintenance staff.	Operation staff to report to Operator.
Control of alien plants	Regular monitoring and removal of alien invasive plant species.	Throughout operation	Operation & Maintenance staff.	Operation staff to report to Operator.
On-going Environmental Education	As defined in the EMPr	During maintenance and operation.	Operation & Maintenance staff.	Operation staff to report to Operator.
Closure & Decommissioning Phase				
Items, management, responsibilities and monitoring as per construction phase, as above.				
Decommissioning of Solar facility.	Closure of facility in compliance with legislation and this EMPr.	After lifespan of project.	Facility operator & Joe Morolong local municipality.	Local, provincial and national Authorities
On-going Environmental Education	As defined in the EMPr	During decommissioning.	ECO & Contractor	Contractor report to ECO. ECO to provide details in monthly reports.

15. NON-COMPLIANCE

Should any person commit an action of non-compliance he/she may be convicted of an offence, in terms of Sub-regulation (1) of the National Environmental Management Act, to imprisonment for a period not exceeding two years or to a fine not exceeding an amount prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

Apart from a fine resulting from any legal mechanism, the ECO may advise the ER to impose a penalty for non-compliance in terms of this Environmental Management Programme (EMPr). The procedure detailed below is for a spot fine in terms of this EMPr and does not detail the procedure for fining in terms of any other legal mechanism.

15.1 PROCEDURES

The contractor shall comply with the environmental specifications and requirements of this EMPr, the EA and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the ER to impose a penalty.

In the event of non-compliance, the following recommended process shall be followed:

- The ECO shall issue a notice of non-compliance to the ER, stating the nature and magnitude of the contravention. A copy shall be provided to the Project Developer / Proponent.
- The ER will issue this notice to the Contractor.
- The Contractor shall act to correct the transgression within the period specified by the ER.
- The Contractor shall provide the ER with a written statement describing the actions to be taken to discontinue the non-compliance, the actions taken to mitigate its effects and the expected results of the actions. A copy shall be provided to the Project Developer / Proponent.
- In the case of the Contractor failing to remedy the situation within the predetermined time frame, the ER shall impose a monetary penalty (spot fine) based on the conditions of contract.
- Should the transgression be a blatant disregard of conditions of the EMPr or EA, the ER (on advice from the ECO) can at their discretion immediately issue a fine and require the remediation (without first giving the contractor a chance to remediate)
- In the case of non-compliance giving rise to physical environmental damage or destruction, the ER shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor the full costs incurred in doing so.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMPr, disagreement regarding the implementation or method of implementation of conditions of the EMPr or EA etc. any party shall be entitled to require that the issue be referred to specialists for determination.
- The ER on advice from the ECO shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

15.2 OFFENCES AND PENALTIES

Any avoidable non-compliance with the conditions of the EMPr shall be considered sufficient ground for the imposition of a penalty by the Engineer

Possible offences, which should result in the issuing of a contractual penalty, include, but are not limited to:

- Unauthorised entrance into no-go areas;
- Catching and killing of wild animals, and removal or damage to conservation-worthy plant species;

- Open fires outside of the contractor camp site and insufficient fire control;
- Unauthorised damage to natural vegetation;
- Unauthorised camp establishment (including stockpiling, storage, etc.);
- Hydrocarbons / hazardous material: negligent spills / leaks and insufficient storage;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping etc.);
- Erosion due to negligence / non-performance;
- Excessive cement / concrete spillage / contamination;
- Non-induction of staff.

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17. PHOTOGRAPHS, DESCRIPTIONS OF POTENTIAL PROTECTED PLANT SPECIES AT HOTAZEL 2

Species of conservation concern are illustrated below. The list includes species listed as threatened under the South African Red Data List of Plants, as well as those species which are provincially protected and are either significant or suitable for search and rescue. Common species within protected genera are not illustrated, but will nevertheless need to be listed on the permit application to clear the site.

These photographs can be used for environmental education purposes during the construction phase of the project to ensure that all construction staff are made aware of the protected status of these species. This photographic record of protected plant species, particularly those suitable for rescue and translocation, will have to be updated after the pre-construction survey by the ecologist.

17.1 BOSCIA FOETIDA



Status	Provincially Protected
Suitable for search rescue	No
Abundance at site	Occasional
Description	Small tree, usually with white stems. Produces small green flowers and small round fruits.

Figure 4: *Boscia foetida*

17.2 HOODIA GORDONII



Figure 5: *Hoodia gordonii*

Status	Nationally Protected
Suitable for search rescue	Yes

Abundance at site	Occasional
Description	Stem succulent up to 1m tall, but usually lower. Has spiny upright stems 5-10 cm wide. Produces large brownish flowers.

17.3 ACACIA ERIOLOBA



Figure 6: *Acacia erioloba*

Description:

- Medium-sized to large deciduous or semi-evergreen tree; crown usually flat-topped, dome shaped or rounded. Older branches often contorted.
- Bark thick, rough and deeply longitudinally fissured.
- Spines paired, straight, often swollen and fused at the base, white or reddish.
- Leaves bipinnately compound; leaflets prominently veined below.
- Flowers in globose heads, bright golden-yellow.
- Pods large, flat, thick and semi-woody, velvety grey, half moon-shaped, indehiscent.
- Usually on red Kalahari sands, often more abundant along drainage lines.

17.4 ALOE DICHOTOMA



Figure 7: *Aloe dichotoma*

Description

- Small succulent tree with a thickened trunk and dense rounded crown.

- Leaves succulent, in terminal rosettes, blue-green or yellowish green; margin with small yellowish brown teeth.
- Inflorescence branched, borne terminally above a leaf rosette; flower spikes about 300 mm long, bright yellow.
- On rocky hills and sandy flats throughout most of the Northern Cape.

18. PHOTOS & DESCRIPTION OF POTENTIAL ALIEN PLANT SPECIES ON SITE

18.1 PROSOPIS GLANDULOSA

Category 1

Medium to large tree with pinnate leaves and usually thorny. Usually associated with drainage lines, but may grow anywhere. Occasional at the site, but can increase rapidly as a result of disturbance.

When cut down the tree resprouts, so herbicides are usually needed in combination with cutting. The appropriate techniques and herbicides can be obtained from the DAFF website.

Figure 8: *Prosopis glandulosa*



18.2 ARGEMONE OCHROLEUCA

White – flowered Mexican poppy. Category 1.



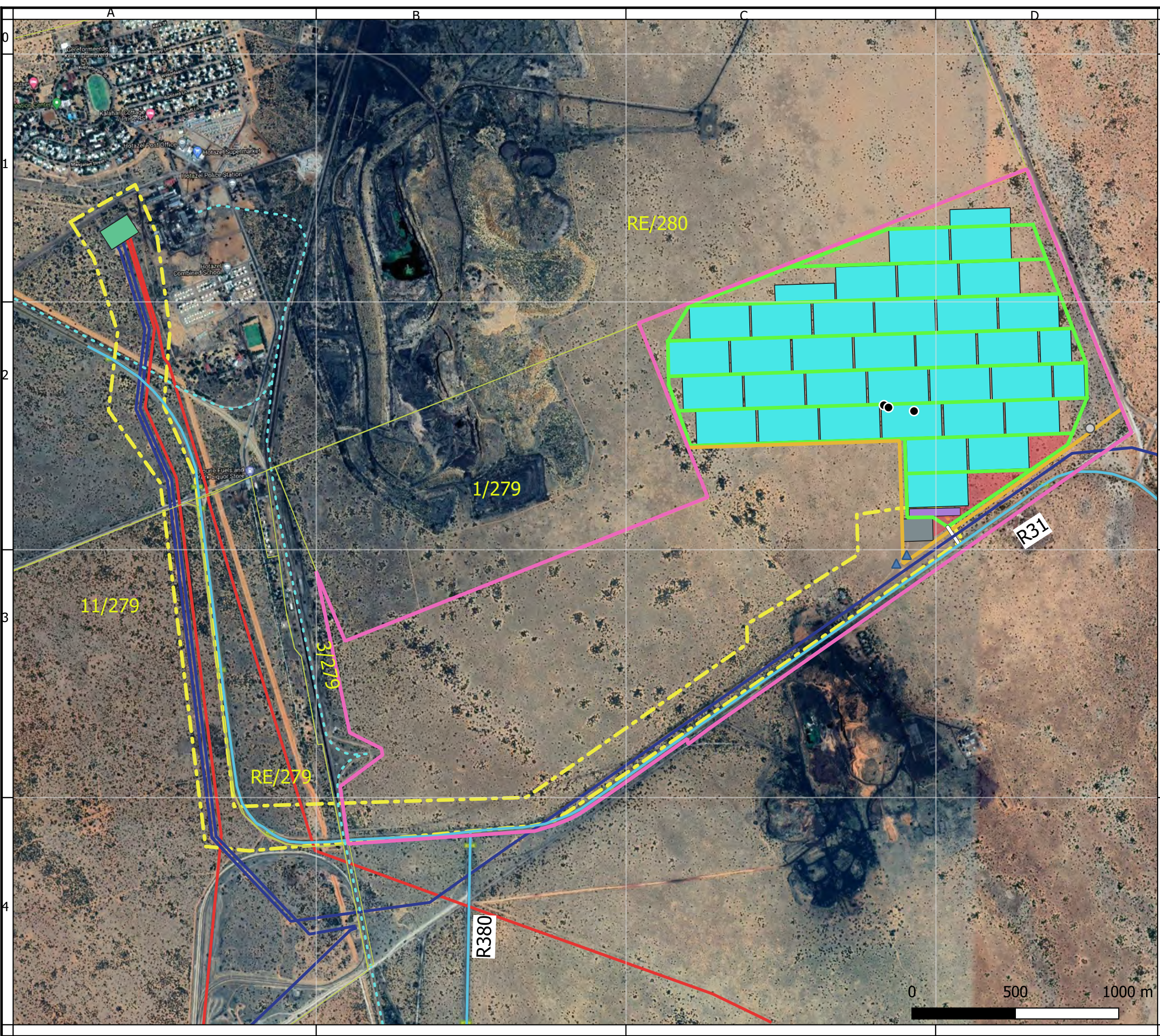
Figure 9: *Argemone ochroleuca*

18.3 SALSOLA KALI

Tumbleweed, Tolbos. Not Listed.



Figure 10: *Salsola kali*



KEY

Existing infrastructure

- Remainder of Farm York A 279
- - - Farm Boundaries
- Roads
- - - Railways
- Eskom Hotazel Substation
- Eskom 132 kV Line
- Eskom 66 kV Line
- Water Infrastructure
- Network Tower
- ▲ Borehole Points

Proposed layout components

- Access Road
- Site Boundary
- Internal Road Network
- PV Array
- Temporary Laydown Area
- O&M block
- On-site and/or Collector Substation
- - - Grid Connection Corridor

- NOTES:**
1. Internal roads ~5m
 2. Access Road ~8m
 3. No Freshwater features located on site
 4. No Environmental sensitivities located on site
 5. Service road adjacent to powerline will be maintained as jeep track
 6. No on-site accommodation will be permitted
 7. Areas outside site boundary considered "no-go" areas during construction
 8. Inverter stations/ MV transformers to be located within designated PV Array areas

Description	By	Date	Rev



Registered address:
 ABO Wind renewable energies
 Unit B1, Mayfair Square
 Century Way, Century City
 Cape Town, 7441
 www.abo-wind.com

Project
Hotazel Solar 2

Title
Solar Park Layout

File -	Project code 9313	Drawing No 02	Date 09/02/2021
Scale As shown	Drawn ZH		

HOTAZEL 2

PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE



CONCEPTUAL STORMWATER MANAGEMENT PLAN

JUNE 2020



P O Box 381
Century City
7441
Tel. +27 21 555 0400

Rev	Description	Date
0	Issued in Draft	June 2020
1	For Submission	

This report was prepared and reviewed by the undersigned.

Prepared:

Sonet Gerber,
Civil Technologist

Reviewed:

Waseemah Isaacs
Principal Civil Technologist

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SPECIALIST EXPERTISE

SONET GERBER

Profession: Civil Technologist
Position in Firm: Senior Civil Technologist
Qualifications: PrTech 201470085
Years of Experience: 15 years

Summary of Experience: Sonet Gerber is a Senior Civil Technologist in the Transport and Infrastructure division in Knight Piésold's Cape Town Office. She has 15 years of engineering experience. After completing her in-service training at Ninham Shand Consulting Engineers in Port Elizabeth, she started her career abroad working at the London Borough of Newham where she was employed at the Highways Department in 2003 and gaining valuable experience working on various Road Safety Schemes. In recent years, she concentrated on the design and maintenance of various roads and engineering infrastructure projects. She is currently a Civil Technologist in the Roads and Civil Engineering Services Design division in Cape Town.

Specialist Experience:

COCT: Public Transport Interchange: Project Manager: Concept Design and Detail Design.

Drakenstein Municipality: Assistant Contract Engineer & Resident Engineer: Bulk Water pipe, HDPE 450mm dia of 2.3km.

SANRAL: The Periodic Maintenance (Resurfacing) of National Route 12, Assistant Contracts Engineer of 3 projects running simultaneously, Section 9 between Voetpaddrift and Kimberley, Section 10 between Kimberley and Riverton and Section 10 between Riverton and Windsorton.

City of Cape Town: Non Motorised Transport Eastern Region Phase 2 Phase 3 Master Planning design, compilation of tender documentation and adjudication. Project Management. Oversee Resident Engineers of individual projects, including site administration.

Greenfield Properties: Aan De Wijnlanden Phase 2 Phase 5, Eersteriver Assisting in Development Rights approval, Services Report and Stormwater Management plan and supporting documentation for EIA and Water Use licence. Assistant RE and Contracts Engineer.

Drakenstein Municipality: Wellington Industrial Area Upgrade Project Manager team of 6 Specialist sub-consultants in the process of Conduction specialist studies and obtaining rights for the Wellington Industrial Park. KP also appointed to deal with Civil Engineering aspect of the application including for Services report and Stormwater Management Plan

Greenfield Properties: Aan De Wijnlanden, Eersteriver Tender documentation, Assistant Resident Engineer and project management.

City of Cape Town: Non Motorised Transport Eastern Region Design and draughting, compilation of tender documentation as well as adjudication. Project Management and Resident Engineer for 4 individual projects, including site administration.

City of Cape Town: Quality Public Spaces Design and draughting, compilation of tender documentation as well as adjudication. Assistant Resident Engineer for 5 Individual projects, including site administration.

City of Cape Town: Non Motorised Transport Central Region Design and draughting, compilation of tender documentation as well as adjudication. Assistant Resident Engineer for 5 individual projects, including site administration.

City of Cape Town: Non Motorised Transport Central Region Design and draughting, compilation of tender documentation as well as adjudication. Assistant Resident Engineer for 4 individual projects, including site administration.

Hout Bay: Pick 'n Pay Shopping Centre Development Responsible for the design and draughting of civil engineering services for construction, including road signage. Monitoring and site inspections.

Philippi: Shopping Centre Development Preparation of civil engineering services drawings for construction.

Jeffreys Bay Windfarm: Mainstream Renewable Power South Africa Proposed road cost estimate

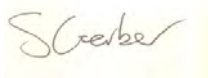
DCD Dorbyl: Foul Sewer Services Design and draughting. Monitoring and site inspections including site administration.

SPECIALIST DECLARATION

I, **Sonet Gerber**, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing – any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable on terms of section 24F of the Act.

Signature of Specialist:



Name of Specialist: Sonet Gerber

Date: 15 June 2020

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1. INTRODUCTION

Knight Piésold Consulting was appointed by Hotazel Solar Facility 2 (Pty) Ltd to investigate and compile a Conceptual Stormwater Management Plan for the proposal of a photovoltaic (PV) energy facility and associated infrastructure, referred to as Hotazel 2.

This report should be viewed as a localised high-level study and not as a detailed design report. The objective is purely to demonstrate that stormwater from the new development could be managed and controlled in an optimised and non-destructive manner. The purpose of this study is to prepare a conceptual Stormwater Management Plan (SWMP) to support the Environmental Impact Assessment Process of the proposed Hotazel 2 facility.

The SWMP includes the following:

- Determining the catchment area of the project site;
- Defining the topography, slope gradients and rainfall intensities;
- Estimating expected floods for the catchment;
- Confirming of existing drainage patterns and streams;
- Proposing drainage elements such as side drains, outlets and other mitigation measures to accommodate the resultant stormwater flows.

2. DEFINITIONS AND ASSUMPTIONS

The following assumptions are made on stormwater calculations and are deemed to be adequate for a conceptual investigative report:

- The Rational Method is used for flood calculations, which is widely accepted to be very accurate for areas of this size;
- The recurrence period applied is a 1:50 year design flood;
- There are no watercourses that will affect planning and the design of the solar facility.

3. EXISTING SITE CONDITIONS

3.1. Location

The site is situated approximately 3km south-east of Hotazel, see Figure 3.1. Other towns in proximity of the project include Kuruman, located approximately 52km south-east, and Kathu located approximately 60km south of the project site. The site falls within Ward 4 of the Joe Morolong Local Municipality of the John Taolo Gaetsewe District Municipality. A railway line runs along the south-western boundary of the project site and traverses the area just west of the project in a north-to-south direction. A formal gravel access road currently provides access from the regional road (R31) to the property. This gravel road then becomes a formal 2-wheel track. Hotazel 2 site will require a new access gate.

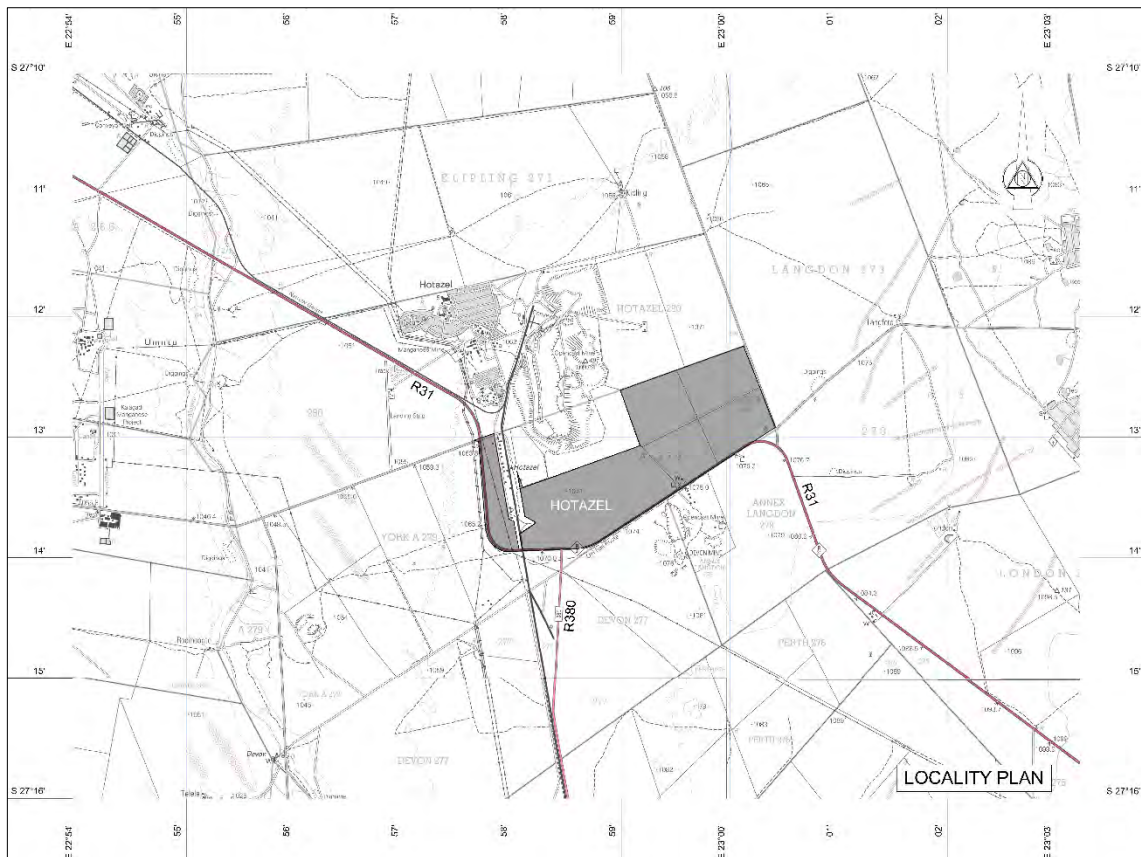


Figure 3.1: Locality Plan

3.2. Topography, Geomorphology and Vegetation (Drainage Characteristics)

The Northern Cape Province is situated in the north-western extent of South Africa. It is South Africa's largest Province. The Remaining Extent (Portion 0) of Farm York A 279 has an almost level topography with a straight shape and a slope gradient of 0.5%. It is currently utilised for limited agricultural purposes. The vegetation that covers the property has been classified as Kathu Bushveld with a well-developed grass layer and a variable density tree layer.

3.2.1. Drainage Patterns and Runoff Characteristics

The approximate total drainage area of the Remaining Extent (Portion 0) of Farm York A 279 is in excess of 636.8 hectares. Although the property does not reflect evidence of any watercourses, the drainage pattern slopes in a north westerly direction, see *Figure 3.2*. The slope gradient for the longest drainage path length within the catchment area is 0.27%.

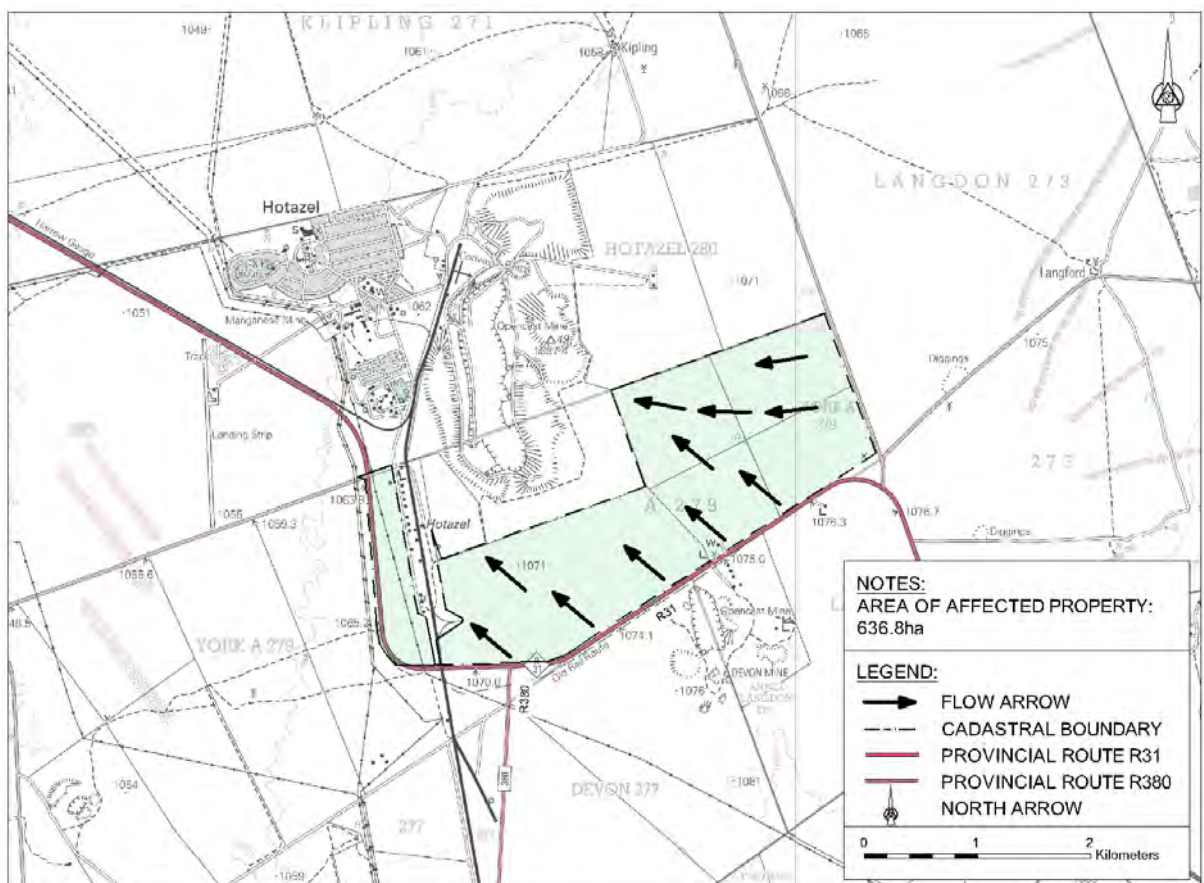


Figure 3.2: Drainage Pattern of Remaining Extent (Portion 0) of Farm York A 279

It should be noted that, in the absence of detailed topographical survey information, 1:10 000 orthographical maps together with spot height data taken on site were used to establish the drainage patterns. The greater catchment area is 1 830ha, see *Figure 3.3* below. The sparse vegetation, together with the flat gradient and permeable soils yield very low runoff coefficients.



Figure 3.3: Catchment Areas

3.3. Geology and Soils

A number of manganese mining operations occur within close proximity of the project site. The Langdon Devon Manganese Mine is located immediately south of the project site. As a result, numerous waste rock dumps associated with these manganese mines are located within the vicinity of the project site. The manganese mine located directly to the north of the site is no longer in use and is under rehabilitation with reduced dust emission.

The geological map as well as field studies in the region show that the Kalahari sands in this area are extensively underlain by hardpan calcretes, some of which at least can be assigned to the Mokalanen Formation of the Kalahari Group. Soils in the region are usually red and yellow well drained sandy soil. Lime is generally present in part or most of the landscape and structureless free drained soil may occur. These soils may also have restricted depth, excessive drainage, high erodibility and low natural fertility.

3.4. Climate and Hydrology

The Kalahari region has consistent temperatures with summer and early autumn rainfall. Winters are very dry. The wettest part appears on the eastern side of the Kalahari with a Mean Annual Precipitation (MAP) of 500mm and the driest on the western side with a MAP of 120mm. The MAP for the whole Kalahari Ecozone is 250mm per annum. Precipitation is lowest in July, with an average of 2mm, and highest in March, with an average of 66mm (see *Figure 3.4*).

The Northern Cape and Namibia boast the highest solar radiation intensity anywhere in Southern Africa. At an average temperature of 26.1 °C, January is the hottest month of the year. July has the lowest average temperature of the year, which is 11.2 °C; see *Figure 3.5*. The information represented in the Figures below was gathered from the weather station at Winton, situated approximately 46km from the proposed site.

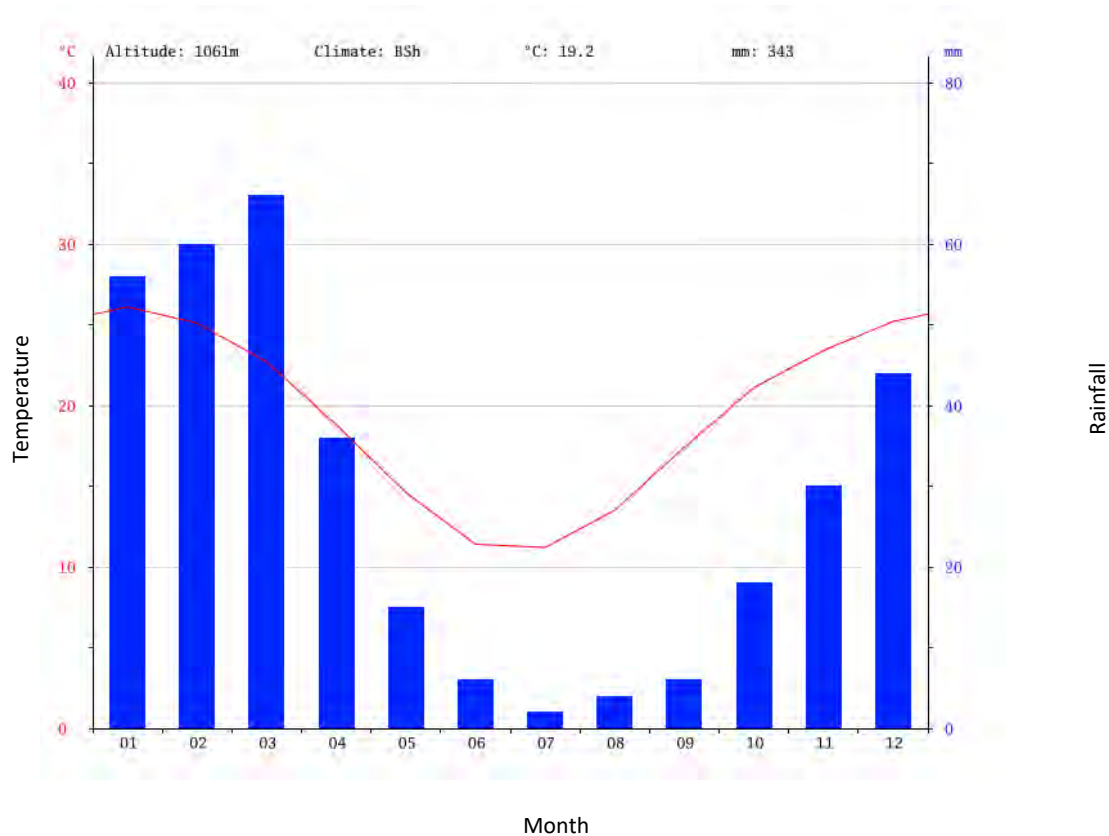


Figure 3.4: Monthly Rainfall for Hotazel

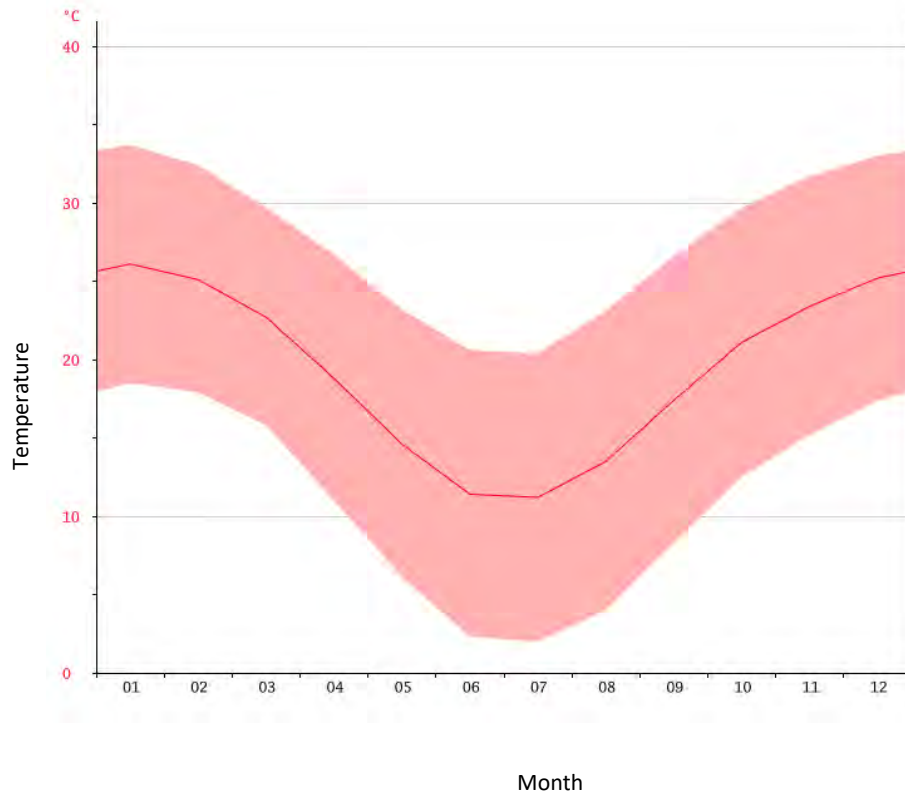


Figure 3.5: Average Monthly Temperatures for Hotazel

4. STORWATER CALCULATIONS

As mentioned previously, the calculations to determine the run off volumes and intensities of the site are based on the Rational Method with a return period of 1:50 years.

4.1. Runoff Coefficient

4.1.1. Pre-development

The pre-development runoff coefficient was calculated by making an allowance for 20% of semi-permeable soil. The site consists mainly of Bushveld with a well-developed grass layer and a variable density tree layer; see run-off coefficient percentages listed in *Table 4.1* below.

Table 4.1: Pre-development Runoff Coefficient Percentages

Permeability	% Applied	Vegetation	% Applied
Very	0	Thick bush & Forest	0
Permeable	80	Light Bush & Cultivated Land	30
Semi-Permeable	20	Grasslands	70
Impermeable	0	Bare	0
<i>TOTAL</i>	<i>100</i>	<i>TOTAL</i>	<i>100</i>

Based on the above, the calculated runoff coefficient for the pre-development phase is 0.284; (see refer *Annexure A* for further detail calculations).

4.1.2. Post-development

The post-development runoff coefficient takes the installation of the panels into account, as well as the vegetation alterations that may occur post construction. An area of 230ha (approximately 36% of the total property) is required for the development of Hotazel 2. Even though the PV panels are impermeable, they will be mounted on bases that only cover a small surface area. A small percentage of the run-off coefficient was thus allowed for hardened surface. Hotazel 2 will aim to make use of driven/ rammed piles, or ground/ earth screw mounting systems, and only in certain instances resort to concrete foundations, should geotechnical studies necessitate this. Concrete foundations may be used for the tracker at the end of each row.

During the construction phase, vegetation will be lost, and this may not fully recover because of the shade that will be created by the panels post construction. A further allowance was made by amending the vegetation area when calculating the post-development peak runoff flows by allowing for 17% bare areas or no vegetation. These percentage figures are reflected in *Table 4.2* below.

Table 4.2: Post-development Runoff Coefficient Percentages

Permeability	% Applied	Vegetation	% Applied
Very	0	Thick bush & Forest	0
Permeable	76	Light Bush & Cultivated Land	30
Semi-Permeable	20	Grasslands	53
Impermeable	4	Bare	17
<i>TOTAL</i>	<i>100</i>	<i>TOTAL</i>	<i>100</i>

Based on the above, the calculated runoff coefficient for the post-development phase is 0.305; (see *Annexure B* for further detail calculations).

4.2. Time of Concentration

The following formula was used to calculate the time of concentration, which is the time it takes for surface water at the furthest point on the site to reach the lowest area:

$$T_c = \left(\frac{0.87 \times L^2}{1000 \cdot S} \right)^{0.385}$$

Where T_c = Time of Concentration (hours), L = Length of waterway (km), S = average slope.

4.3. Point Intensity

Point Intensity is based on standard time of concentration, and information was extracted from rain fall intensity depth graphs for the area.

4.4. Runoff

4.4.1. PV Area

The runoff distribution of the respective catchment areas will be dictated by the layout of the larger PV area, as well as the internal roads and channels. Each PV area which is a combination of smaller blocks should preferably be orientated in such a way to minimise the impact on natural drainage patterns. A typical PV panel configuration (subject to the final site development plan) is indicated in the *Figure 4.1*, with the resultant drainage pattern indicated in *Figure 4.2*.

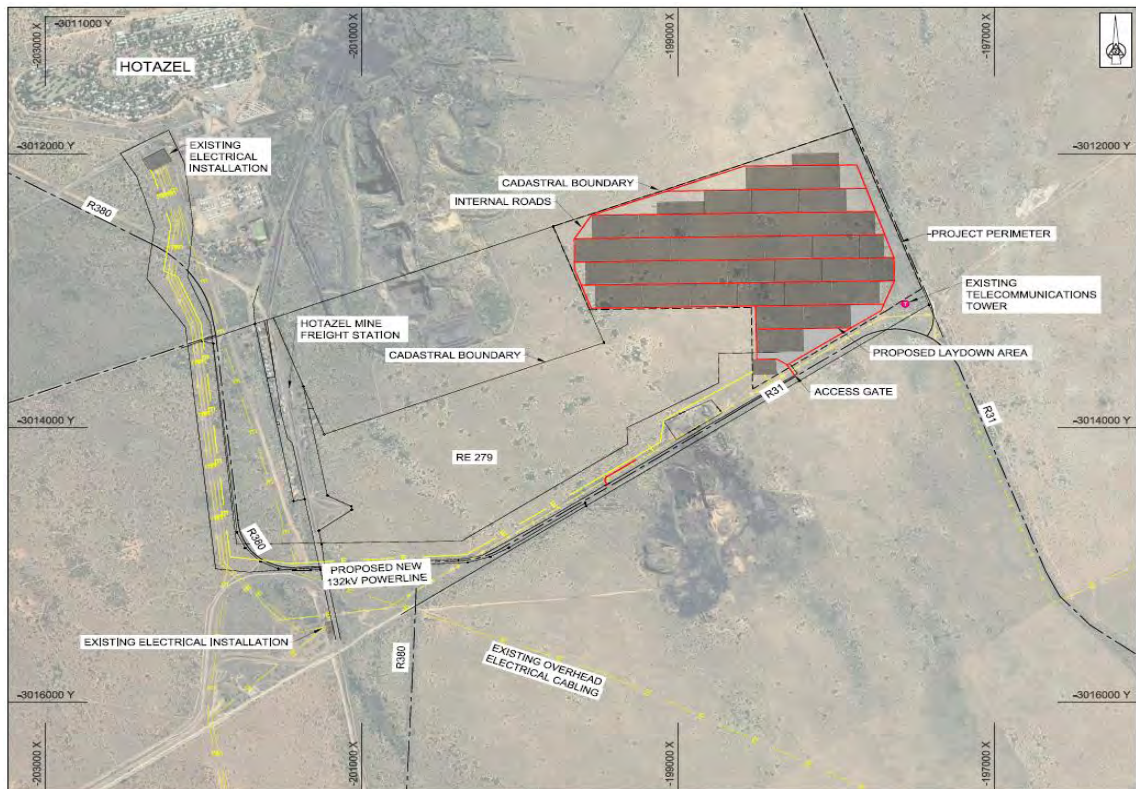


Figure 4.1: Conceptual Layout of PV Panels



Figure 4.2: Drainage pattern for conceptual layout of PV panels

There are no waterbodies or places of ponding visible on the proposed site.

The 1:50 year flood occurrence for pre and post-development runoff for the catchment area is shown below:

Catchment Area (A) = 18.3 km²

Pre-Development Run-Off Coefficient (C) = 0.284

Post Development Run-Off Coefficient (C) = 0.305

Time of Concentration (TC) = 2.03 hours

Intensity (I) = 28.3 mm/hr

$$\text{Rational Method Pre-Development Q (Peak Run-Off)} = \frac{CIA}{3.6} = \mathbf{38.97 \text{ m}^3/\text{s}}$$

$$\text{Rational Method Post-Development Q} = \frac{CIA}{3.6} = \mathbf{41.70 \text{ m}^3/\text{s}}$$

4.4.2. Access Roads

An access road is proposed from the regional road (R31) to the property, approximately 430m from the bend. The new access road should be stabilised from the R31 access point to the proposed on-site substation and laydown area, see Figure 4.3.

It has been recommended that the first 200m of the access road be upgraded to a hardened (bitumen) surface, to prevent damage to the road edge. This upgrade should allow for sufficient drainage; however the remainder of the access road will remain gravel and provision must be made for drainage thereof.

The run-off across the gravel road is viewed to be very limited. The flow velocity and depth at the various outlets will have to be confirmed during the detailed design stage. The average velocity is in the order of 1.0 m/s for the gentle slopes (0.5%) of the site. Such flows will not cause any serious erosion, but appropriate measures should be implemented at outlets and points of concentration caused by drainage channels. This will reduce the risk of erosion damage. Frequent nominal drainage measures, typically piped culverts and/or mitre drains cut by a grader, must be provided at intervals between 200m to 300m as dictated by the site conditions and must

be taken care of in the detail design. These could also be in-situ formed drifts where the road alignment is close to the natural ground level.

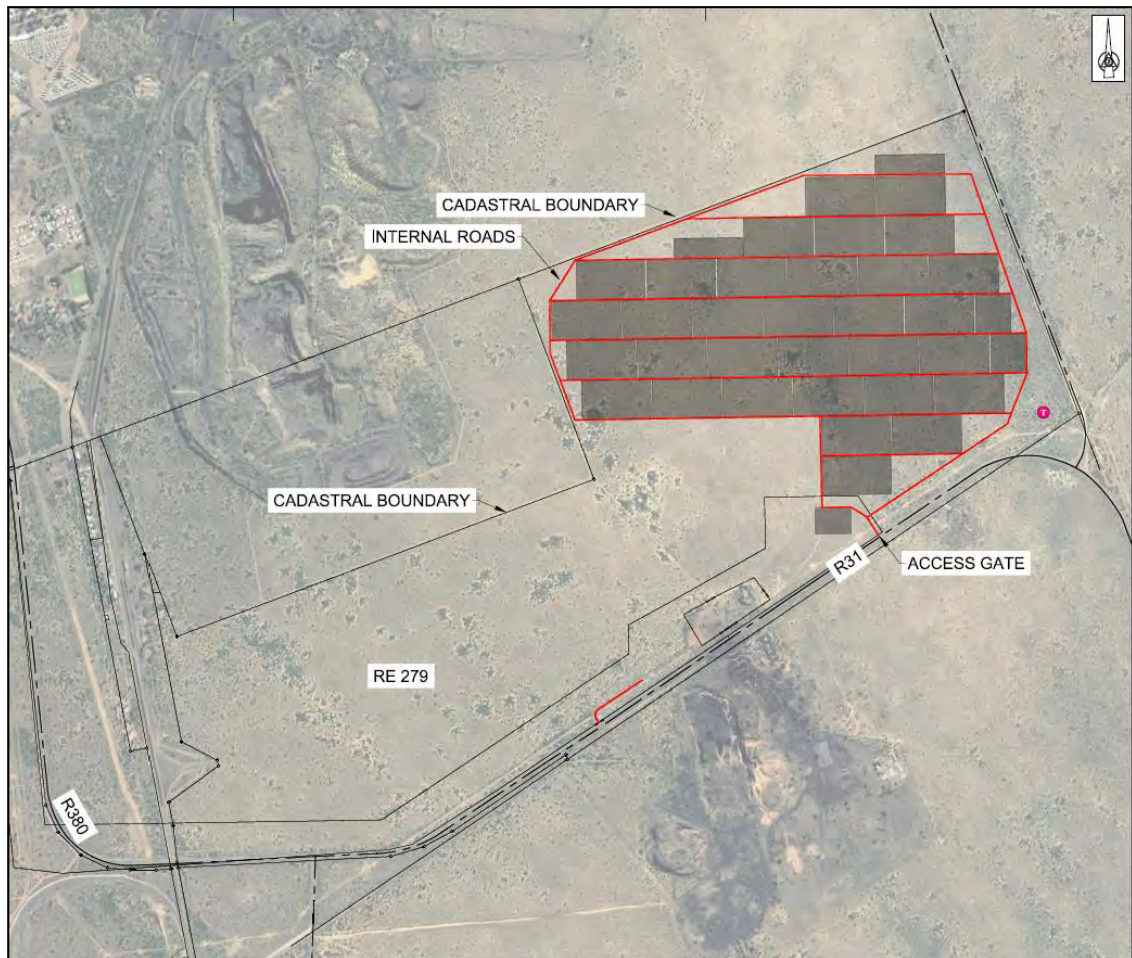


Figure 4.3: Access Roads

5. PROPOSALS FOR STORMWATER MANAGEMENT

The existing drainage patterns and characteristics should be preserved as far as possible. It is therefore suggested that the existing contours and vegetation be retained and that the internal roads are designed and constructed to minimum standards. The runoff calculations indicate that an additional 2.7 m³/s or roughly a 7% increase in peak runoff will have to be accommodated when designing the stormwater management measures.

Drainage structures would include smaller diameter pipes (encased in concrete because of the low fill anticipated) or preferably gravel or concrete drifts. These drifts should have cut-off walls on the down-stream side as a minimum requirement.

5.1. Side Drains

Open drains will be provided along the proposed internal roads or between PV panels. These drains would be gravel drains with concrete or edge beam protection at road crossings, where required.

5.2. Berms

Berms are proposed to prevent external stormwater from entering the PV area and for directing flow to suitable areas of release; see *Figure 5.1* for typical berm details. Cut off drains are proposed on the southern property boundary to reduce runoff from the larger catchment area (see Fig 3.3).

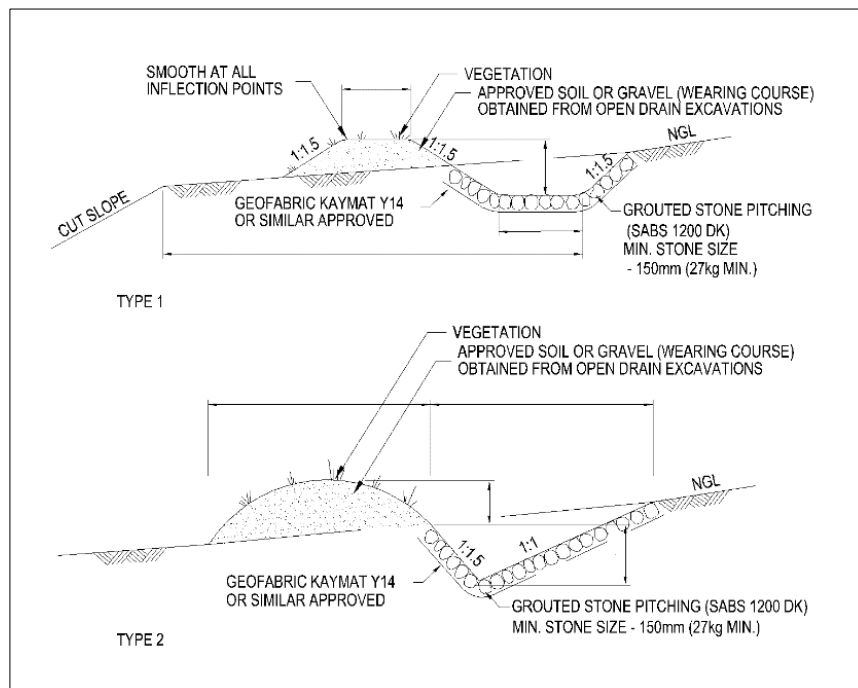


Figure 5.1: Typical Berm Detail

5.3. Outlets

All culverts on the access roads must be provided with concrete outlets with erosion protection. Side drain outlets should be terminated with suitable erosion protection to reduce the velocity and the flow depth.

6. EROSION PROTECTION MEASURES

The volume and velocity of the stormwater runoff must be thoroughly evaluated during the detailed design phase. The following erosion protection measures should be considered:

- Side drains, see *Figures 6.1 and 6.2*
- Inlet and outlet structures, see *Figures 6.3 and 6.4*

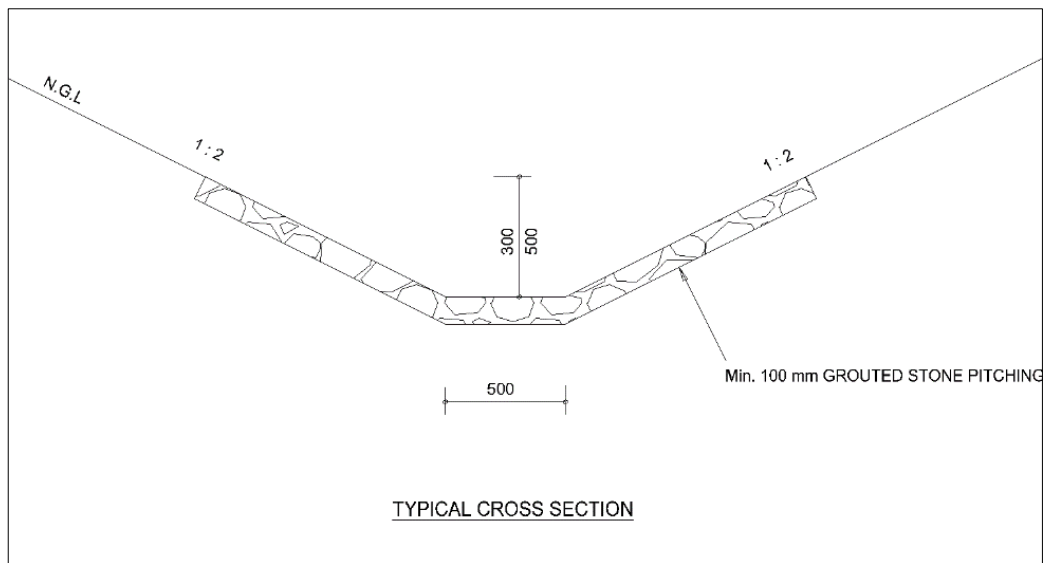


Figure 6.1: Typical Stone Pitched Side Drain

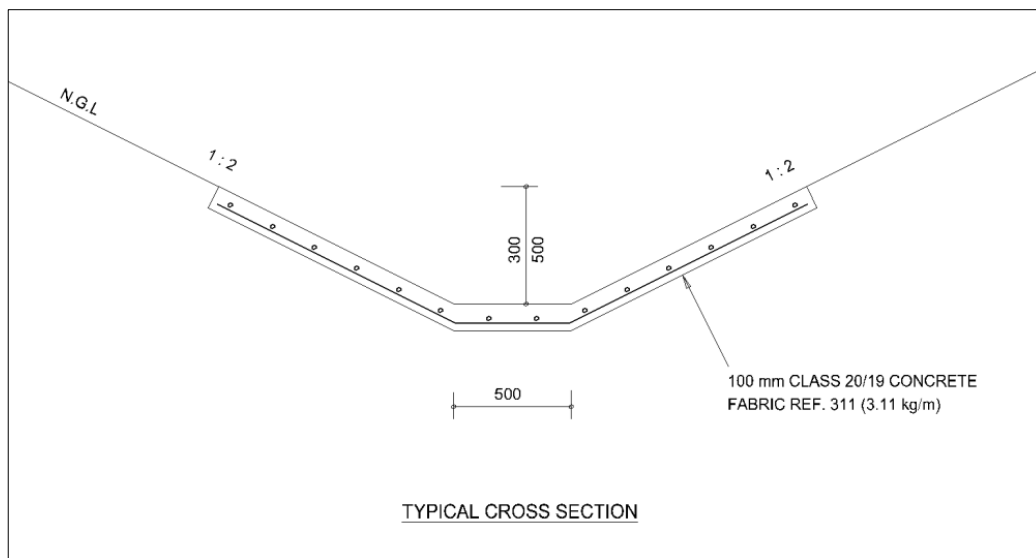


Figure 6.2: Typical Concrete Lined Side Drain

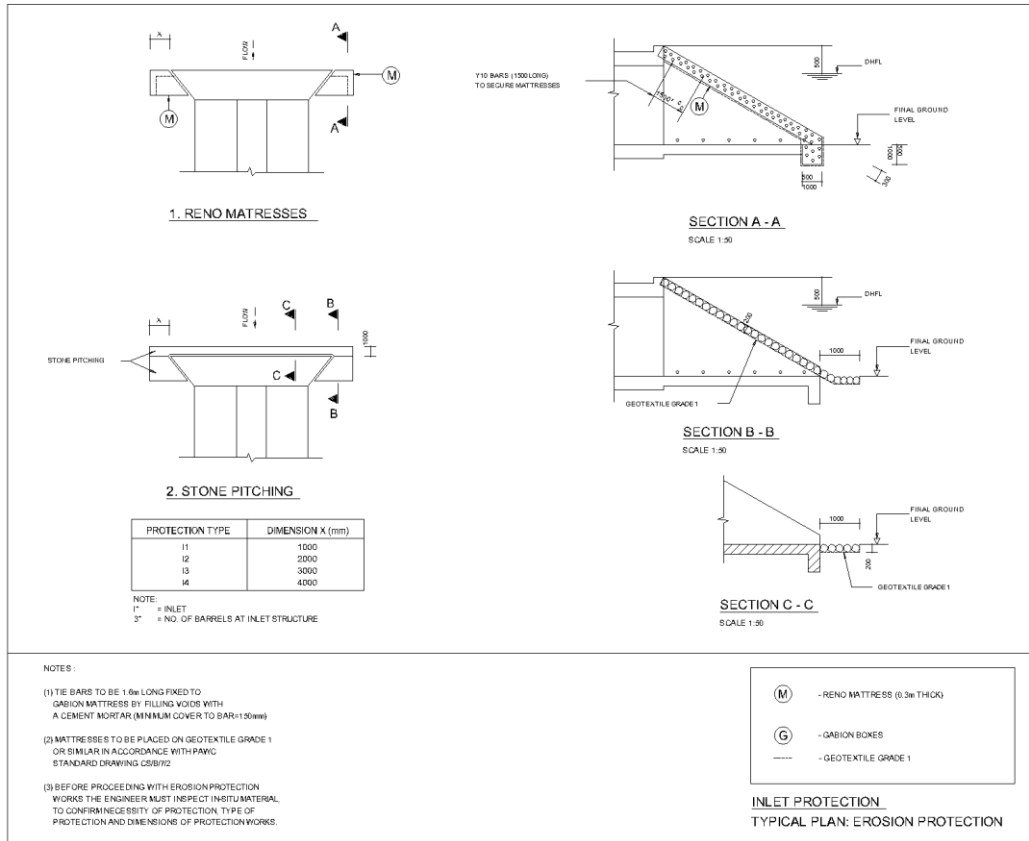


Figure 6.3: Typical inlet erosion protection measures

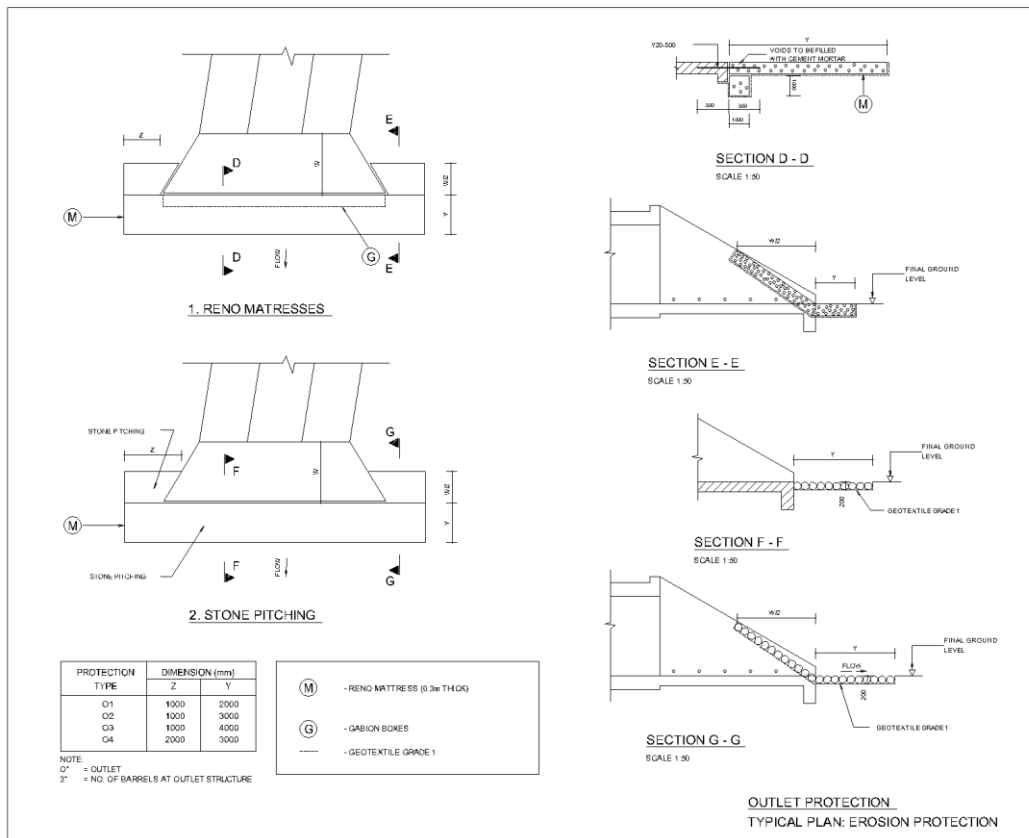


Figure 6.4: Typical outlet erosion protection measures

It is envisaged that in combination with the above the following are also likely to be required:

- Stone masonry walls to reduce the flow velocity in steep areas;
- Side Drain Outlets with stone pitching to prevent erosion; and
- Temporary berms and straw bales during construction should streams be identified, to reduce flow and sediment transport during this phase.

During the construction phase, special attention must be given to stormwater so that construction activities do not result in any water ponding, especially in the vicinity of the roads and structures.

7. WASTE WATER MANAGEMENT

Several mines in the area are located to the north-west, south-west and south of the Hotazel Solar site. Venturing closer to these mining areas will expose the PV energy facility to increased dust levels, thus reducing the efficiency of the solar PV modules. After the installation of the panels, the cleaning (washing) of the solar panels is likely to generate small amounts of additional runoff. This process is estimated to occur twice a year and add approximately 1l/m² of additional runoff to the site, over a period of approximately 2 weeks. This runoff would however be spread throughout the site, and due to the low localised water volumes would cause minimal, if any, erosion on the site and may even help as a form of dust control. The methods used for washing the panels determine the mitigation measures to be applied. This could be in the form of phasing the washing of panels or optimising the methods used. The overall effect on the site is expected to be very low, provided the cleaning water is free from detergents and includes only approved bio-degradable substances.

Rain will also aid in keeping the PV panels clean. The solar module surfaces are installed at a relatively large incline with gaps between modules. This does not allow significant water build up on the modules while also reducing the energy generated by the falling rain droplets.

On large structures or buildings, appropriate guttering could be used around the building to avoid water erosion caused by roof water flowing off the roof. Wherever practically possible, stormwater run-off from the gutter/roofs should be captured and stored in rainwater tanks. If this water cannot be captured, water should be channelled into energy dissipating structures to spread the water and slow it down to reduce risk of erosion. Such structures could be constructed from precast concrete, loosely packed rock or perforated bags filled with stone.

8. CONCLUSIONS AND RECOMMENDATIONS

The additional stormwater runoff generated from the new facility post-development is almost negligible compared to pre-development. It is therefore envisaged that limited stormwater management will be required to reduce the impact of the proposed development on the environment. Should both Hotazel Solar and Hotazel 2 be constructed, there would be a combined peak post development runoff increase of 6 m³/s. This can comfortably be accommodated when designing the stormwater management measures.

By implementing earth drains, lined drains and limited erosion protection structures, the stormwater on the site, can easily be accommodated in a safe and non-destructive manner. The development of the site should also be done in accordance with the existing slopes. The contours should be followed closely in order to minimise impacts on the existing drainage patterns.

9. REFERENCES

- Various Municipal Management of Urban Stormwater Impacts Policies
- The Georgia Stormwater Management Manual
- The South African National Roads Agency Limited. (2006). Drainage Manual Fully Revised 5th Edition
- Adamson P.T. (1983). Technical Report TR 102. Southern African Storm Rainfall
- Cape Environmental assessment Practitioners: Hotazel Solar, Final Scoping report, September 2018

10. ANNEXURES

Annexure A: Pre-Development Runoff Calculations

Flood Frequency Analysis: Rational Method

Project = HOTAZEL 2
 Analysed by = RdV
 Name of river = N/A
 Description of site = RE OF FARM YORK A 279 : PRE-DEVELOPED
 Date = 2020/04/23
 Area of catchment = 18.3 km²
 Dolomitic area = 0.0 %
 Mean annual rainfall (MAR) = 326.00 mm
 Length of longest watercourse = 7.0 km
 Flow of water = Overland flow
 Height difference = 19.0 m
 Value of r for over land flow = Clean soil (r=0,1)
 Rainfall region = Inland
 Area distribution = Rural: 100 %, Urban: 0 %, Lakes: 0 %

Catchment description - Urban area (%)

Lawns		Residential and industry	Business	
Sandy, flat (<2%)	0	Houses	City centre	0
Sandy, steep (>7%)	0	Flats	Suburban	0
Heavy soil, flat (<2%)	0	Light industry	Streets	0
Heavy soil, steep (>7%)	0	Heavy industry	Maximum flood	0

Catchment description - Rural area (%)

Surface slopes		Permeability	Vegetation	
Lakes and pans	0	Very permeable	Thick bush & forests	0
Flat area	80	Permeable	Light bush & cultivated land	30
Hilly	20	Semi-permeable	Grasslands	70
Steep areas	0	Impermeable	Bare	0

Average slope = 0.00271 m/m

Time of concentration = 2.03 h

Run-off factor

Rural - C1 = 0.284

Urban - C2 = 0.000

Lakes - C3 = 0.000

Combined - C = 0.284

The HRU, Report 2/78, Depth-Duration-Frequency diagram was used to determine the point rainfall.

Return Period (years)	Time of concentration (hours)	Point rainfall (mm)	ARF (%)	Average intensity (mm/h)	Factor Ft	Runoff coefficient (%)	Peak flow (m ³ /s)
1:20	2.03	45.1	98.4	21.9	0.90	25.6	28.41
1:50	2.03	58.7	98.0	28.3	0.95	27.0	38.79
1:100	2.03	72.2	97.5	34.6	1.00	28.4	50.02

Run-off coefficient percentage includes adjustment saturation factors (Ft) for steep and impermeable catchments

Calculated using Utility Programs for Drainage 1.1.0

Annexure B: Post-Development Runoff Calculations

Flood Frequency Analysis: Rational Method

Project = HOTAZEL 2
 Analysed by = RdV
 Name of river = N/A
 Description of site = RE OF FARM YORK A 279 : POST-DEVELOPED
 Date = 2020/04/23
 Area of catchment = 18.3 km²
 Dolomitic area = 0.0 %
 Mean annual rainfall (MAR) = 326.00 mm
 Length of longest watercourse = 7.0 km
 Flow of water = Overland flow
 Height difference = 19.0 m
 Value of r for over land flow = Clean soil (r=0,1)
 Rainfall region = Inland
 Area distribution = Rural: 100 %, Urban: 0 %, Lakes: 0 %

Catchment description - Urban area (%)

Lawns	Residential and industry	Business		
Sandy, flat (<2%)	0	Houses	0	City centre
Sandy, steep (>7%)	0	Flats	0	Suburban
Heavy soil, flat (<2%)	0	Light industry	0	Streets
Heavy soil, steep (>7%)	0	Heavy industry	0	Maximum flood

Catchment description - Rural area (%)

Surface slopes	Permeability	Vegetation	
Lakes and pans	0	Very permeable	0
Flat area	80	Permeable	76
Hilly	20	Semi-permeable	20
Steep areas	0	Impermeable	4
		Thick bush & forests	0
		Light bush & cultivated land	30
		Grasslands	53
		Bare	17

Average slope = 0.00271 m/m

Time of concentration = 2.03 h

Run-off factor

Rural - C1 = 0.305

Urban - C2 = 0.000

Lakes - C3 = 0.000

Combined - C = 0.305

The HRU, Report 2/78, Depth-Duration-Frequency diagram was used to determine the point rainfall.

Return Period (years)	Time of concentration (hours)	Point rainfall (mm)	ARF (%)	Average intensity (mm/h)	Factor Ft	Runoff coefficient (%)	Peak flow (m ³ /s)
1:20	2.03	45.1	98.4	21.9	0.90	27.5	30.54
1:50	2.03	58.7	98.0	28.3	0.95	29.0	41.70
1:100	2.03	72.2	97.5	34.6	1.00	30.5	53.77

Run-off coefficient percentage includes adjustment saturation factors (Ft) for steep and impermeable catchments

Calculated using Utility Programs for Drainage 1.1.0

HOTAZEL 2

PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE



TRAFFIC AND TRANSPORTATION ASSESSMENT

JUNE 2020



P O Box 381
Century City
7441
Tel. +27 21 555 0400

Rev	Description	Date
0	Issued in Draft	June 2020

This report was prepared and reviewed by the undersigned.

Prepared:

Amory Le Roux-Arries
Civil Engineer

Reviewed:

Andrew Cleghorn,
Principal Civil Engineer

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SPECIALIST EXPERTISE

AMORY LE ROUX-ARRIES

Profession:	Civil Engineer
Position in Firm:	Civil Engineer
Qualifications:	MEng (Civil)
Years of Experience:	12 years

Summary of Experience: Ms. Amory Le Roux-Arries has approximately nine years of engineering experience in contract administration, business development (specifically in feasibility studies), tendering, compiling business proposals and overseeing business development in West Africa. She has gained experience in the private sectors and is familiar with contractual obligations and client requirements. She has gained practical experience on road construction obligations and client requirements. She has gained practical experience on road construction and traffic engineering. Amory has recently achieved her Masters in Engineering with specialization in Traffic and Transportation Engineering.

Specialist Experience:

- **Various Traffic Impact Assessments:** Amory has completed traffic impact assessments (TIA) both in South Africa and cross border. TIAs were completed for the Gautrain Mbombela Hatfield Station, Edenburg Church rezoning, Lichtenburg Solar Farms, Hotazel Solar Farm, Augeigas Development (Namibia), Motse Development (Botswana), Lobatse Taxi rank and bus depot and Richards Bay Steelbridge.
- **City of Cape Town Facilities Management Project:** This project is for the duration of 3 years on an as and when required basis, for the upgrading, construction, installations for Facilities Management Department in the City of Cape Town region. She is responsible for the Project Management and Civil works design on various projects.
- **R53 road upgrade:** Assistant Engineer's Representative Upgrading between Parys and Potchefstroom. She was responsible for Traffic Engineering, Contract Administration, Site Supervision of this project.
- **The City Deep Kazerne Freight Hub Upgrade Programme:** Assistant Engineer's Representative Widening of Rosherville Road and the Extension of Bonsmara Road to Heidelberg Road. She was responsible for Tender Evaluation, Contract Administration, Site Supervision.
- **The Democratic Republic of Congo, Mokambo to Kasumbalesa:** she was responsible for the feasibility study, concept design of the 87km road complete with border posts and warehouses. The feasibility study included financial proposals as well as technical aspects.
- **Aveng Africa Limited – Nuclear Division:** Civil Engineer: Overseeing business development in West Africa. She was responsible for writing procedures and doing business proposals. She prepared estimation proposals of new businesses and tendering, as well as business cases for new business constructability, analysis and estimations.
- **Aveng Grinaker-LTA:** Site Engineer: Growth department and business intelligence: summaries of future projects and possible investment opportunities and Competitor analysis.

- **Grinaker-LTA Nelson Mandela Bay Soccer Stadium:** Student Engineer – Vacation Training: Verification of drawings. She was responsible for the liaison between technical manager and subcontractors and inspection checks.
- **Grinaker-LTA (Port of Ngqura Project-Coega):** Student Engineer – Vacation Training: Assisting with bridge construction. Amory handled the survey and levelling of abutments, foundation supervisor and concrete quality inspections.

SPECIALIST DECLARATION

I, **Amory Le Roux-Arries**, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing – any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable on terms of section 24F of the Act.

Signature of Specialist:



Name of Specialist: Amory Le Roux-Arries

Date: 15 June 2020

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1. INTRODUCTION

Knight Piésold Consulting was appointed by Hotazel Solar Facility 2 (Pty) Ltd to undertake a Traffic and Transportation Assessment for the proposal of a photovoltaic (PV) energy facility and associated infrastructure (Hotazel 2), on a site approximately 3km south east of Hotazel, in the Northern Cape Province of South Africa. This site falls within ward 4 of the Joe Morolong local Municipality in the John Taolo Gaetsewe District.

The Remaining Extent (Portion 0) of Farm York A 279 with Grid connection on Remainder of Farm 280 and Portion 11 of Farm York A 279 has been identified by the applicant (Hotazel Solar Facility 2 (Pty) Ltd) as the preferred site suitable for the development of a commercial PV facility. The total assessed area of the project site is 636.8ha.

Hotazel 2 is to consist of solar photovoltaic (PV) technology with fixed, single or double axis tracking mounting structures, with a maximum generation capacity of 100MW as well as associated infrastructure, which will include:

- On-site substation/ collector switching station;
- Auxiliary buildings (gatehouse and security, control centre, office, warehouse, canteen and visitors centre and staff lockers);
- Inverter stations, transformers and internal electrical reticulation;
- Access and internal road network;
- Laydown area;
- Overhead 132kV electrical distribution line / grid connection connecting to the existing Eskom Hotazel Substation;
- Rainwater tanks; and
- Perimeter fencing and security infrastructure.

1.1 Objectives of the Study

The objectives of this traffic and transportation study are to:

- a. Review the study area and describe the baseline traffic conditions;
- b. Determine the suitability of access to and egress from the site;
- c. To evaluate the safety of the proposed accesses;
- d. Address the impact of traffic generated by the proposed development, with specific reference to traffic safety, operations and road condition;
- e. Propose mitigation measures for any identified significant risks or impacts and enhance positive risks or impacts of the project.

The broad methodology applied to the study is as follows:

- Site visit;
- Reviewing of the Draft Scoping report;
- Data collection and observation of existing traffic conditions;
- Data analysis;
- Liaison with client and property owners;
- Preparation of report and drawings;
- Review of comments on report;
- Amendments to report and finalisation.

1.2 Study Area

The site is located approximately 3km south east of Hotazel, in the Northern Cape Province of South Africa. This site falls within ward 4 of the Joe Morolong local Municipality in the John Taolo Gaetsewe District.

1.3 Locality

The full extent of 636.8ha of the property was assessed for the proposed project. A maximum area of 230ha (approximately 36% of the property) is required for the development of Hotazel 2. The PV structures will occupy a maximum area of 210ha, while the supporting infrastructure such as internal roads (9 ha), auxiliary buildings (1 ha), and an onsite substation (2ha) will occupy the remaining extent. The locality plan is illustrated in **Figure 1.1** below.

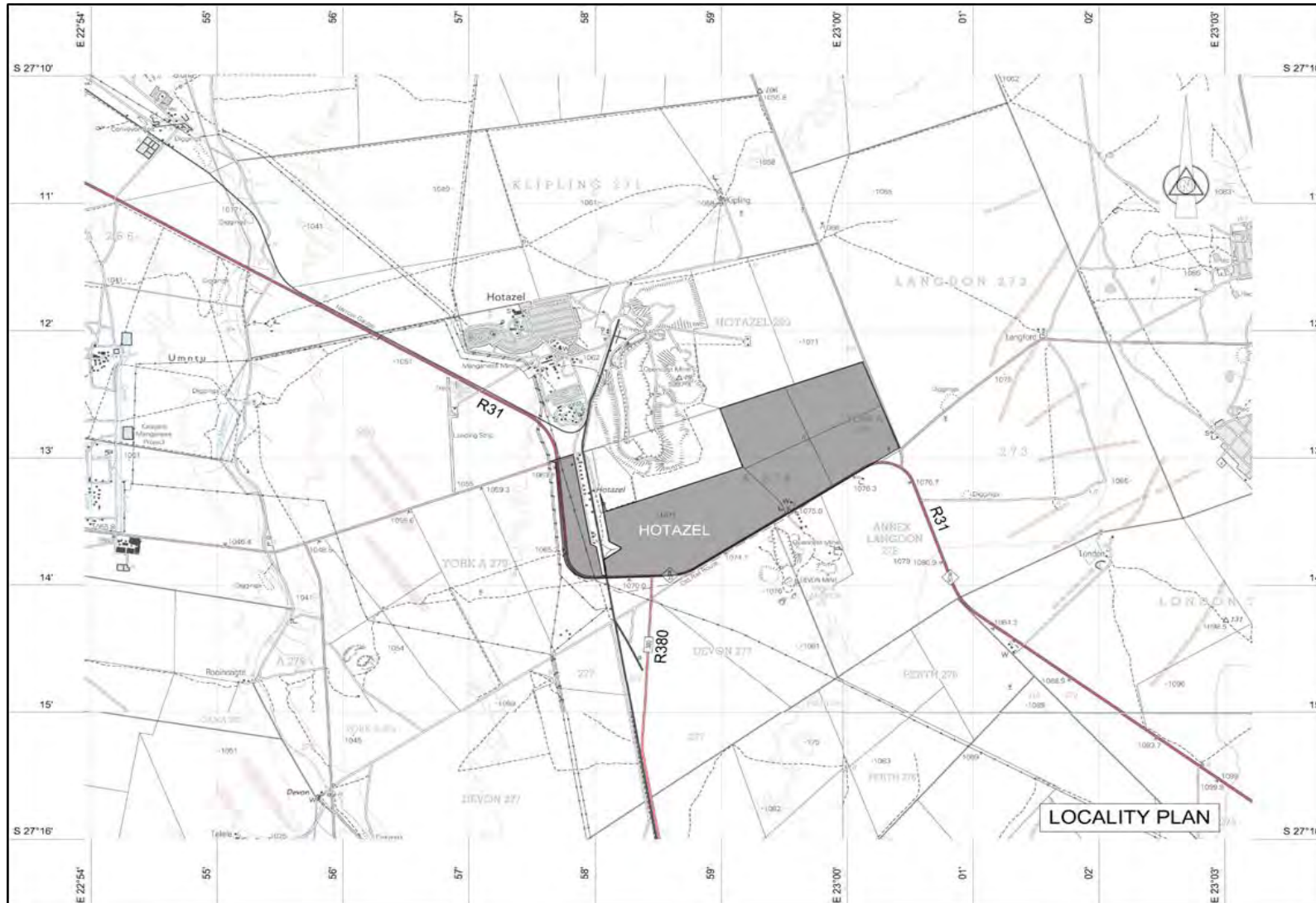


Figure 1.1: Locality Plan

2. THE DEVELOPMENT

2.1. Current and Proposed Land Use Rights

The project site is currently zoned for agricultural use. Rezoning is therefore required to a Special Zone to enable commercial use of this property. The proposed site layout is illustrated in **Figure 2.1** below.

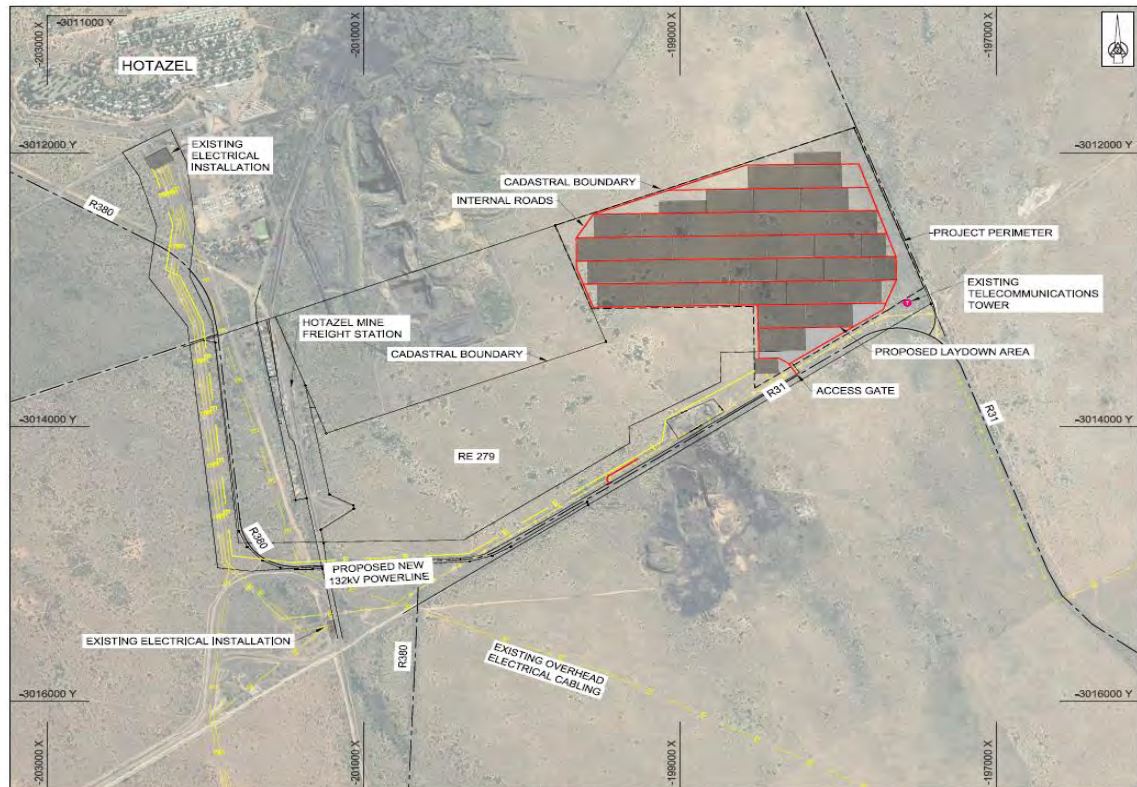


Figure 2.1: Conceptual layout of PV panels

3. ROAD NETWORK ASSESSMENT

National, regional, secondary and the proposed internal access roads will be used to transport all components and equipment required during the construction phase of the solar facility. Some of the components (e.g. substation transformer) may be defined as abnormal loads in terms of the National Road Traffic Act (No.93 of 1996), by virtue of the dimensional limitations.

The routes leading to the site, from both the preferred and alternative ports, are Provincial and National Roads.

3.1. R31

The Regional Route 31 (R31) is a single carriageway road with one lane in each direction. The lanes on this road are approximately 3.7m wide with gravel shoulders. This road connects Kimberley with the Namibian border via Kuruman and Hotazel. The current pavement condition of this road was found to be fair to good.



Photograph 3.1: Road condition R31



Photograph 3.2: Road markings on R31

3.2. R380

The Regional Route 380 (R380) is a single carriageway road with one lane in each direction. The lanes on this road are approximately 3.7m wide with gravel shoulders on both sides of the road. This road connects the town of Kathu, off the N14, to the R31. The speed limit on this road varies between 60 to 80km/h. The R380 also provides access to the Mokala Mine which is located approximately 10km south of the R31 intersection.

The current pavement condition of this road was found to be poor with large crocodile cracks, no road markings and nearly no road edge for most part of the road as shown in **Photographs 3.3 to 3.6**.



Photograph 3.3: Patching along the route



Photograph 3.4: Crocodile cracks in the pavement



Photograph 3.5: non-existing road edge



Photograph 3.6: No centreline

3.3. Current Legislation on Road Freight

The current general limitations on road freight transport are:

- a. Axle load limitation of 7.7 ton on front axle and 9.0 ton on single rear axles;
- b. Axle unit limitations of 18t for dual axle unit and 24t for 3 axle unit
- c. The bridge formula requirements to limit load concentration and to regulate load distribution on the vehicle is as follows:
 - Permissible mass = $(L * 2 100) + 18 000$ kilogram
 - With L = the distance from the first axle of any axle or axle unit to the last axle of any consecutive axle or axle unit (in meters).
- d. Gross vehicle mass limited to 56t. This equates to a typical payload of approximately 30t;

- e. Maximum vehicle length of 22m for interlinks, 18.5m for horse and trailer and 13.5m for a single unit;
- f. Width limit of 2.6m; and
- g. A height limit of 4.3m.

Abnormal permits are required for vehicles exceeding any of the above limits. If, for any one of the above reasons, the equipment cannot be delivered along the preferred route, the alternate route should be considered.

3.4. Authority and Permit Requirements

For authority and permit requirements, the following should be noted:

- a. Toll fees are payable on routes from the port. Toll fees for heavy vehicles with five or more axles are estimated to be R850 per trip on the preferred route.
- b. A separate abnormal load permit will be required for each Provincial Authority that the abnormal load passes through. The estimated fee of these permits' ranges between R10 000 and R 17 500 per trip. The application process for these permits takes approximately four weeks to complete.

4. TRAFFIC GENERATION

4.1. Construction Phase

Imported elements are shipped to, and transported from, the nearest and most practical South African port to site. The largest potential load will be a single 100MVA transformer, with a payload of approximately 90 tons. Freight will be transported predominantly on surfaced National and Provincial roads.

Typical civil engineering construction plant, as well as other specialist equipment, will be required for site preparation, construction of the substation and mounting of the PV support structures. A temporary laydown area will be required during construction. Storage areas will be required for typical construction equipment, see **Figure 4.1**.

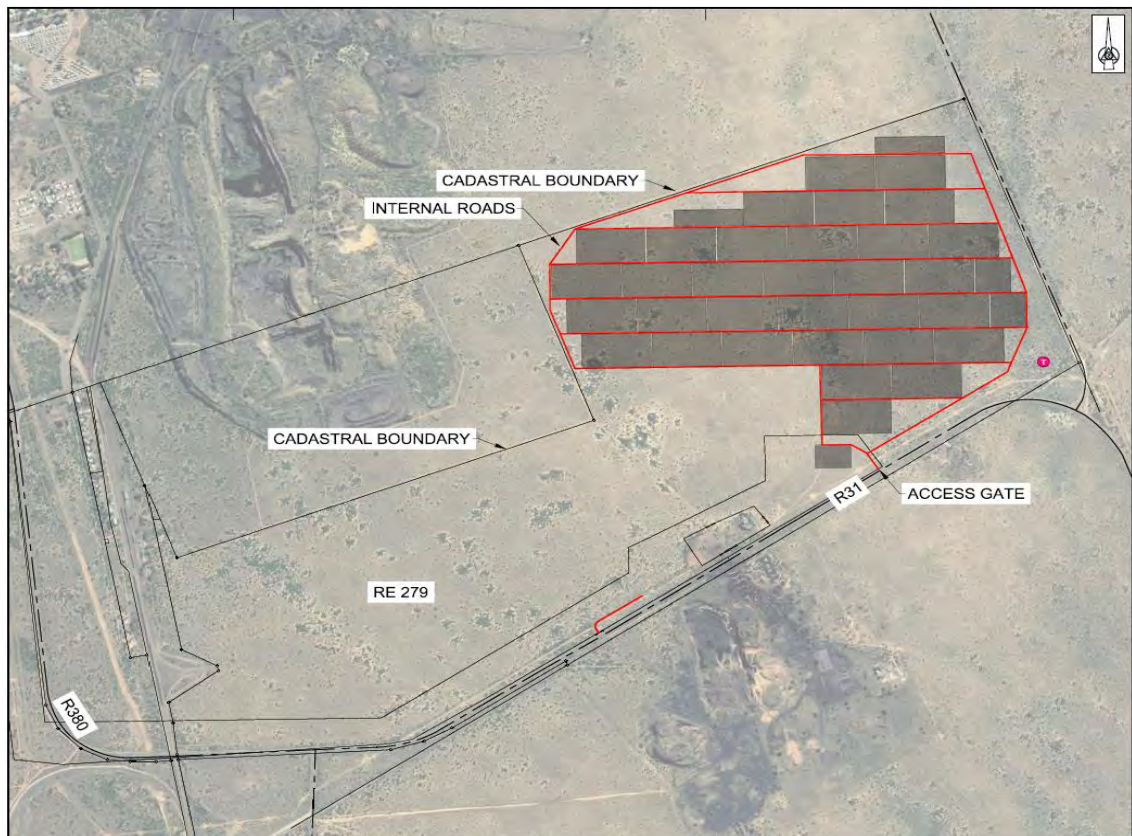


Figure 4.1: Site Areas during Construction

4.2. Traffic Statement

It is estimated that the total number of heavy vehicle trips for a 100MW installation would vary between 4 500 and 6 000. These trips would be made over an estimated construction period of between 12 and 18 months. During the peak of construction the calculated number of heavy vehicle trips would be between 15 and 25 daily of which the impact on the road network would

be negligible, as the additional peak hourly traffic would be 2 trips at most. This low volume of construction traffic will have no significant impact on the existing traffic service levels.

During the peak of the construction phase, it is estimated that approximately 400 workers would be employed on the project site. Where possible, these employees will be sourced from within 50km to 100km from the site. The nearest towns include Hotazel (3km), Deben (41km), Kathu (86km) and Kuruman (72,6km). Employees will need to be transported from the towns to site by bus or taxi. This would equate to 5-7 additional trips during the peak hours, if transported by 60-seater busses, or 20-27 additional trips if 15-seater minibus taxis are used. This may result in slight delays at the entrance to the proposed site.

4.3. Operational Phase

The proposed solar facility is expected to operate for a minimum period of 20 years and will operate 7 days a week, during daylight hours. It is assumed that once the plant is fully operational, it will employ a staff compliment of approximately 60 workers. It is also assumed that the managers, supervisors, and skilled staff will constitute 30% of the permanent workforce. This workforce will travel to work by private vehicles. Assuming vehicle occupancy of 1.2 persons per vehicle, the total trips generated per peak hour are calculated as below:

Trips per peak hour = (60 employees x 30%) / 1.2 persons per vehicle = 15 trips per hour

The total trips per day is equal to 30.

The unskilled employees will therefore constitute 70% of the total workforce. These employees will travel to work by bus or minibus taxi. Assuming vehicle occupancy of 15 persons per taxi, then the total trips generated will be calculated as follows:

Trips per peak hour = (60 employees x 70%) / 15 persons per vehicle = 3 trips per hour

The total trips per day is equal to 6.

During the operational phase, the total number of trips generated by the permanent workforce during the AM and PM hourly peak periods are therefore 18 trips per hour, respectively. No other daily trips are expected to be generated by the PV plant during the operation phase.

5. TRANSPORT STUDY

5.1. Proposed Access

An access road is proposed from the regional road (R31), to the property and should be stabilised from the R31 access point to the proposed on-site substation and laydown area. see **Figure 5.1**.



Figure 5.1: Site Access

During construction, the project site will be accessed via a new access gate on the R31 (approximately 430m from the bend), which will subsequently be utilised for maintenance purposes, during operation. The final site layout will determine the exact extent of the internal roads.

The first 200m of the access road, off the R31, should be investigated prior to construction, to determine the measures required for stabilisation to accommodate heavy vehicles. This access road may require a hardened (bitumen) surface, which will be determined after a geotechnical inspection. The final access road will be 8m in width and stabilised.

5.2. Internal Roads

Permanent internal access roads will be constructed between the solar panels. The internal roads are generally stabilised gravel or informal tracks that are 4 to 5m wide. It is anticipated that the length of these roads will be approximately 17km.

5.3. Route from Preferred Port

The route for the transportation of imported equipment is either from Durban, Coega or Saldanha Bay. The preferred delivery route for abnormal loads, based on distance, road width and surface quality is from Durban port to site as is shown in **Figure 5.2**. This route is 1 018km in length. The route elements are illustrated in **Table 5.1** below.

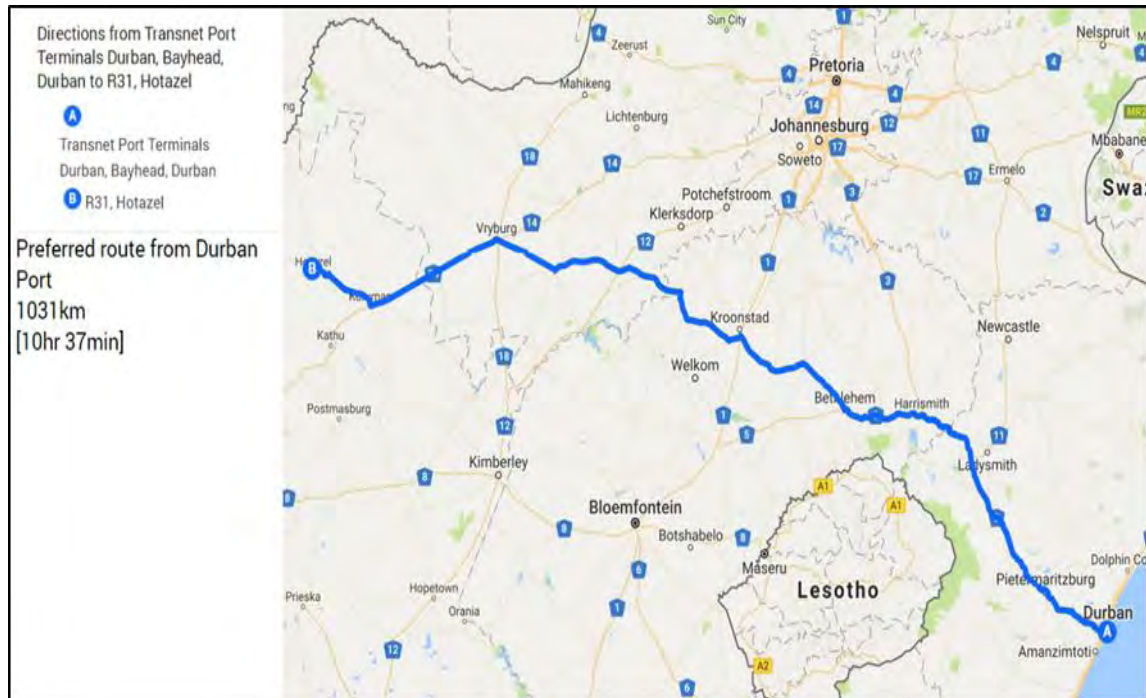










Figure 5.2: Preferred route from Durban port

Table 5.1: Preferred Route Assessment

Section	Route Name	From	To	Distance (km)	Type
1	N3	Durban	Harrismith	300	Surfaced National Road
					<p>The N3 is a dual carriageway four lane road leaving Durban and merges into a two lane road with surfaced shoulders for the most part</p>
2	N5	Harrismith	Bethlehem	91,5	Surfaced National Road
					<p>The N5 is a dual carriageway two lane road with surfaced shoulders for the most part</p>
3	R76	Bethlehem	Kroonstad	143	Surfaced Regional Road
					<p>The R76 is a single carriageway two lane road with gravel shoulders</p>

Section	Route Name	From	To	Distance (km)	Type
4	R713	Kroonstad	Bothaville	92	Surfaced Regional Road
					The R713 is a single carriageway two lane road with gravel shoulders
5	R504	Bothaville	Schweizer-Reneke	147	Surfaced Regional Road
					The R504 is a single carriageway two lane road with gravel shoulders
6	R34	Schweizer-Reneke	Vryburg	62	Surfaced Regional Road
					The R34 is a single carriageway two lane road with gravel shoulders

Section	Route Name	From	To	Distance (km)	Type
7	N14	Vryburg	Kuruman	144	Surfaced Regional Road
					<p>The N14 is a single carriageway two lane road with gravel shoulders for the most part</p>
8	R31	Kuruman	Site	73.2	Surfaced Regional Road
					<p>The R31 is a single carriageway two lane road with surfaced shoulders for the most part</p>

5.4. Route from first Alternative Port

The first alternative port to have equipment delivered would be Coega port, which is 1 040km from site, as shown in **Figure 5.3**. The existing road elements are illustrated in **Table 5.2** below:

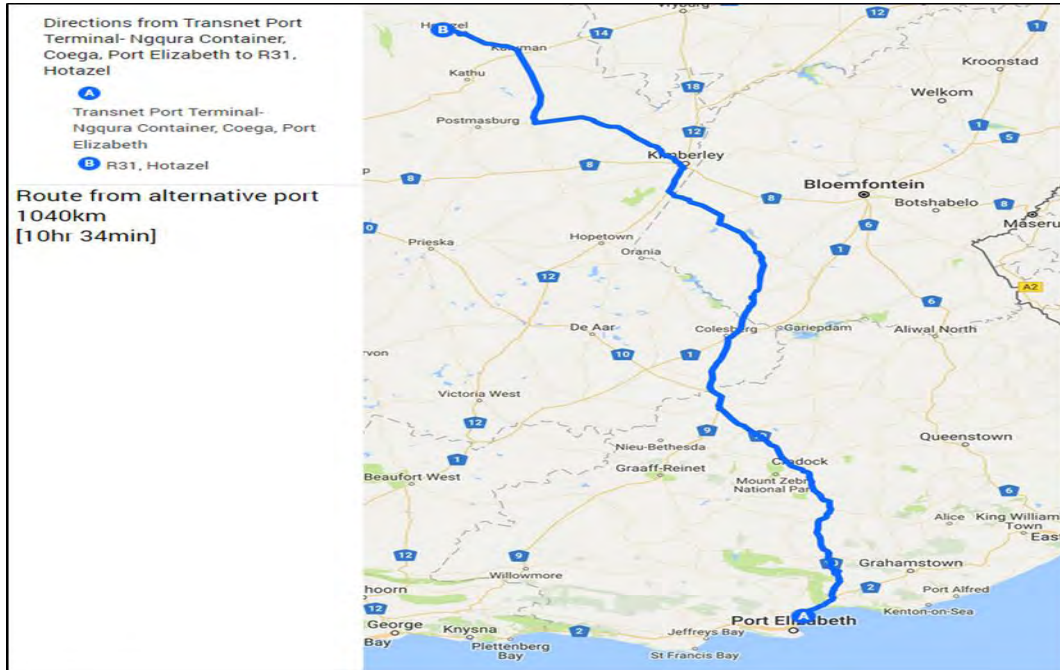
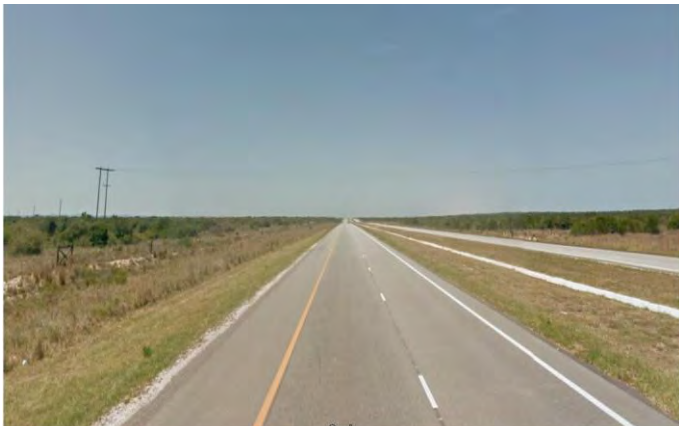





Figure 5.3: Route from alternative 1 Port

Table 5.2 Route Elements from Alternative 1 Port

Section	Route Name	From	To	Distance (km)	Type
1	N2	Port of Coega	N9/N10 intersection	32	Surfaced National Road
			<p>The N2 is a two lane dual carriageway which merges into a one lane in each direction single carriageway with surfaced shoulders.</p>		

Section	Route Name	From	To	Distance (km)	Type
2	N10	N9/N10 intersection	Colesberg	312	Surfaced National Road
					<p>The N10 is a single carriageway two lane road with gravel shoulders</p>
3	R717	Colesberg	Kimberley	277	Surfaced National Road
					<p>The R717 is a single carriageway two lane road with gravel shoulders.</p>
4	R31	Kimberley	Site	73.2	Surfaced Regional Road
					<p>The R31 is a two lane single carriageway, with surfaced shoulders for the most part.</p>

5.5. Route from Second Alternative Port

The second alternative port to have equipment delivered is Saldanha Bay port, which is a distance of 1 059km from site, as shown in **Figure 5.4**. The existing road elements are illustrated in **Table 5.3** below:

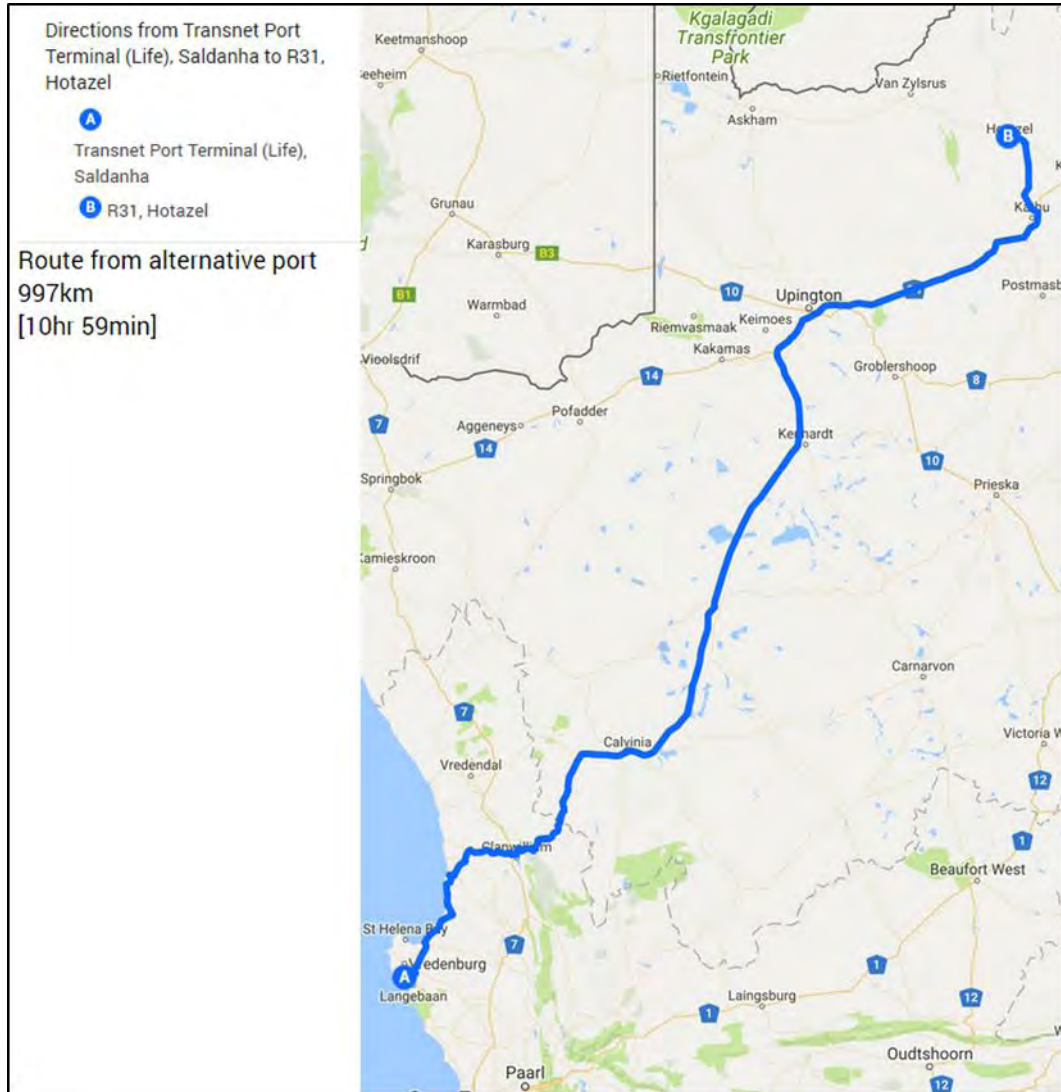





Figure 5.4: Route from alternative 2 port

Table 5.3 Route Elements from Alternative 2 Port

Section	Route Name	From	To	Distance (km)	Type
1	R27	Port of Saldanha	Neilersdrift	245	Surfaced Regional Road
				<p>The R27 is a single carriageway with surfaced shoulders for the most part. This road leads via the R364</p>	
2	N14	Neilersdrift	Kuruman	191	Surfaced Regional Road
				<p>The N14 is a two lane single carriageway with gravel shoulders for the most part. Reduced surfaced shoulders are found along the rest of the road.</p>	
3	R31	Kuruman	Site	73.2	Surfaced Regional Road
				<p>The R31 is a two lane single carriageway, with surfaced shoulders for the most part.</p>	

5.6. Route for Road Construction Materials

The materials required for road construction are available in Kuruman, which is located 69 km from site. All materials can be transported from here and surrounding towns to site, on any of the National and Provincial roads. If any materials are not locally available, they would have to be sourced and transported from major towns such as Johannesburg, Kimberley or Cape Town. These materials can be transported from any of the major cities on the National and Provincial roads, with no limitations imposed on normal freight.

6. CONCLUSIONS

It was observed during the site inspection that the R31 road within the study area is functioning at an acceptable level of service, while the R380 which also leads to site is in very poor to bad condition. Therefore, the R380 should not be used for heavy vehicle transport.

No congestion problems, queue delays and delays were evident on the surrounding network. The surrounding network has the capacity to accommodate the additional volumes of 2 trips per hour for the construction vehicles, as well 15 to 25 bus trips required to transport employees during peak hours.

The additional 18 trips during the operational phase of this proposed development can also be accommodated. If minibus taxis are used for the transportation of employees instead of buses, the additional trips generated will then increase to between 20 and 27 during the peak period. The mitigation measure for this would be to create bus drop-off points at the mine dumps located on the R31.

Dust could pose a potential health risk to people as well as animals in the vicinity of the site during the construction phase of the development and must be addressed in the risk assessment during each phase of the project.

APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY
TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

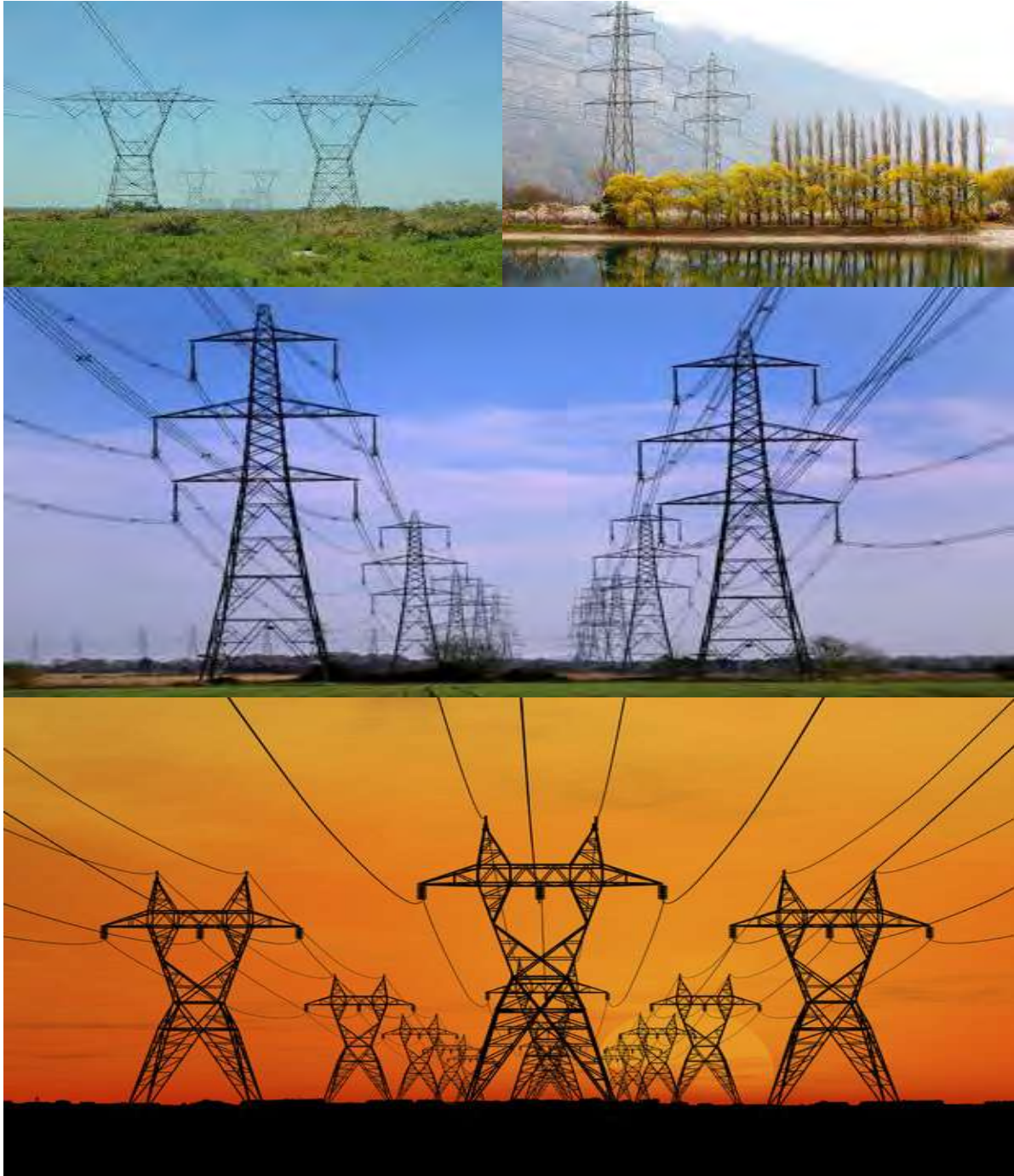


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INTRODUCTION

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 overhead electricity transmission and distribution infrastructure, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

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

4. Scope

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

5. Structure of this document

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART A – GENERAL INFORMATION

1. DEFINITIONS

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

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

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

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

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

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

The method statement must cover applicable details with regard to:

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

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

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

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

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

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

2. ACRONYMS and ABBREVIATIONS

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

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

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

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

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

Responsible Person (s)	Role and Responsibilities
	<p>is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the 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>

Responsible Person (s)	Role and Responsibilities
	<p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer	<u>Role</u>

Responsible Person (s)	Role and Responsibilities
(dEO)	<p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where</p>

Responsible Person (s)	Role and Responsibilities
	<p>specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA,

Responsible Person (s)	Role and Responsibilities
	<p>EMPr and Method Statements;</p> <ul style="list-style-type: none"> - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

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

4.1 Document control/Filing system

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

4.2 Documentation to be available

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

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

4.3 Weekly Environmental Checklist

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

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

4.4 Environmental site meetings

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

4.5 Required Method Statements

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

The method statement must cover applicable details with regard to:

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

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

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

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

4.6 Environmental Incident Log (Diary)

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

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

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

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

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

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

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

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

4.8 Corrective action records

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

4.9 Photographic record

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

The Contractor shall:

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

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

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

4.10 Complaints register

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

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

4.11 Claims for damages

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

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

4.12 Interactions with affected parties

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

The ECOs shall:

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

4.13 Environmental audits

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

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

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

4.14 Final environmental audits

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

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

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

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

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

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

5.1 Environmental awareness training

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

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

<p>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> <ul style="list-style-type: none"> - A record of all environmental awareness training courses undertaken as part of the EMP must be available; - Educate workers on the dangers of open and/or unattended fires; - A staff attendance register of all staff to have received environmental awareness training must be available. - Course material must be available and presented in appropriate languages that all staff can understand. 						
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5.2 Site Establishment development



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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with <i>Section 5.5: Fencing and gate installation</i>; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 	Main contractor	Submission of method statement	Prior to specific activity	ECO	Monthly	ECO Report

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; – Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited. 	Contractor	As defined	Prior to construction	ECO	Monthly	ECO Report

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; 	Contractor		continuous	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; - All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition - All contractors must be made aware of all these access routes. - Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; - Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; - In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with <i>section 4.9: photographic record</i>; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on pre-planned and approved roads. 						
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5.5 *Fencing and Gate installation*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: <i>photographic record</i>; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access 	Contractor	As defined	Prior to construction and continually	ECO	Monthly	ECO Report

<p>restricted areas, where appropriate and would not cause harm to the sensitive flora;</p> <ul style="list-style-type: none"> - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

<p>Impact management outcome: Undertake responsible water usage.</p>						
<p>Impact Management Actions</p>	<p>Implementation</p>			<p>Monitoring</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"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter 	<p>Contractor</p>	<p>As defined</p>	<p>Throughout construction</p>	<p>ECO</p>	<p>Monthly</p>	<p>ECO Report</p>

<p>or cross it and does not operate from within the river;</p> <p>b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and</p> <p>c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.</p> <p>– Ensure water conservation is being practiced by:</p> <p>a. Minimising water use during cleaning of equipment;</p> <p>b. Undertaking regular audits of water systems; and</p> <p>c. Including a discussion on water usage and conservation during environmental awareness training.</p> <p>d. The use of grey water is encouraged.</p>						
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5.7 Storm and waste water management

<p>Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.</p>						
<p>Impact Management Actions</p>	<p>Implementation</p>			<p>Monitoring</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>
<p>– 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;</p> <p>– 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;</p> <p>– Natural storm water runoff not contaminated during the</p>	<p>Contractor</p>	<p>physical</p>	<p>Throughout construction</p>	<p>ECO</p>	<p>Monthly</p>	<p>ECO report</p>

<p>development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <ul style="list-style-type: none"> – Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 						
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5.8 Solid and hazardous waste management

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

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

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

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 *Vegetation clearing*

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>pest control operator or is appropriately trained;</p> <ul style="list-style-type: none"> - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to <i>Section 5.3: Access restricted areas</i>. <p>Servitude:</p> <ul style="list-style-type: none"> - Vegetation that does not grow high enough to cause interference with overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager; - Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land owner and the EA holder - Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; - Vegetation must be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280; - Debris resulting from clearing and pruning must be disposed of at a recognised waste disposal facility, unless the landowners wish to retain the cut vegetation; - In the case of the development of new overhead transmission and distribution infrastructures, a one metre "trace-line" must be cut through the vegetation for stringing 						
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purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing which limit impact to the environment must always be considered.						
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5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Nesting sites on existing parallel lines must be documented; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Minimise impact to heritage resources.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in <i>Section 5.3: Access restricted areas</i>; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

remove/collect such material before development recommences.						
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5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.14 Sanitation

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

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.15 Prevention of disease



Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Undertake environmentally-friendly pest control in the camp area; - Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; - Free condoms must be made available to all staff on site at central points; - Medical support must be made available; - Provide access to Voluntary HIV Testing and Counselling Services. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

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.
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Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see <i>Hazardous Substances section 5.17</i>). 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and 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); 						
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to <i>Section 5.7</i> for procedures concerning <i>storm and waste water management</i> and <i>5.8</i> for <i>solid and hazardous waste management</i>. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance <i>Section 5.7: storm and waste water management</i>. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.19 Batching plants

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <i>Section 5.20: Dust emissions</i>) 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; - Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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5.20 Dust emissions

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>acceptable level;</p> <ul style="list-style-type: none"> - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 *Blasting*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

activity taking place on Site.						
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5.22 Noise

Impact Management outcome: Unnecessary noise is prevented by ensuring that noise from construction activities is mitigated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.24 Stockpiling and stockpile areas

Impact management outcome: Erosion and sedimentation as a result of stockpiling are reduced.

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

5.25 Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - No vegetation clearing must occur during survey and pegging operations; - No new access roads must be developed to facilitate access for survey and pegging purposes; - Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; - The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.26 Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with <i>Section 5.18: Workshop equipment maintenance and storage</i>; and - Hazardous substances spills from equipment must be 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>managed in accordance with <i>Section 5.17: Hazardous substances</i>.</p> <ul style="list-style-type: none"> – Batching of cement to be undertaken in accordance with <i>Section 5.19 : Batching plants</i>; – Residual cement must be disposed of in accordance with <i>Section 5.8: Solid and hazardous waste management</i>. 						
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5.27 *Assembly and erecting towers*

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; – In sensitive areas, tower assembly must take place off-site or away from sensitive positions; – The crane used for tower assembly must be operated in a manner which minimises impact to the environment; – The number of crane trips to each site must be minimised; – Wheeled cranes must be utilised in preference to tracked cranes; – Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>of environmental impact;</p> <ul style="list-style-type: none"> - Access to tower positions to be undertaken in accordance with access requirements in specified in Section 8.4: Access Roads; - Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing; - No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor; - Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; - Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; - Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; - Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed; - Only existing disturbed areas are utilised as spoil areas; - Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; - Surface water runoff is appropriately channeled through or around spoil areas; - During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that; - The surface of the spoil is appropriately rehabilitated in 						
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<p>accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;</p> <ul style="list-style-type: none"> - The retained topsoil must be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season. 						
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5.28 Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas; - The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; - Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used; - Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter; - Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing; - No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing; - Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner; - Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries. 						
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5.29 Socio-economic

Impact management outcome: Socio-economic development is enhanced.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.30 Temporary closure of site

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

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

5.31 Landscaping and rehabilitation



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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of tower sites and access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>Section 5.24: <i>Stockpiling and stockpiled areas</i>);</p> <ul style="list-style-type: none"> - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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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: Hotazel Solar Facility 2 (Pty) Ltd

Tel No: + 27 (21) 418 2596

Fax No: + 27 (0) 86 611 0882

Postal Address: 101, Block A, West Quay Building, 7 West Quay Road, Waterfront, Cape Town, 8000

Physical Address: 101, Block A, West Quay Building, 7 West Quay Road, Waterfront, Cape Town, 8000

7.1.2 Details and expertise of the EAP:

Name of EAP: Cape EAPrac – Dale Holder

Tel No: 044 8740365

Fax No: 044 874 0111

E-mail address: dale@cape-eaprac.co.za

Expertise of the EAP (Curriculum Vitae included): Ndip nat con 16 years experience in environmental management.

7.1.3 Project name: Hotazel 2

7.1.4 Description of the project: Powerline Infrastructure for Hotazel 2 Solar Energy Facility

7.1.5 Project location:

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

7.16 Preliminary technical specification of the overhead transmission and distribution:

- Length: to be determined (dependant on Alternative)
- Tower parameters
 - Number and types of towers: to be determined
 - Tower spacing (mean and maximum): to be determined
 - Tower height (lowest, mean and height): to be determined
 - Conductor attachment height (mean) to be determined
 - Minimum ground clearance: to be determined

7.2 Sub-section 2: Development footprint site map

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

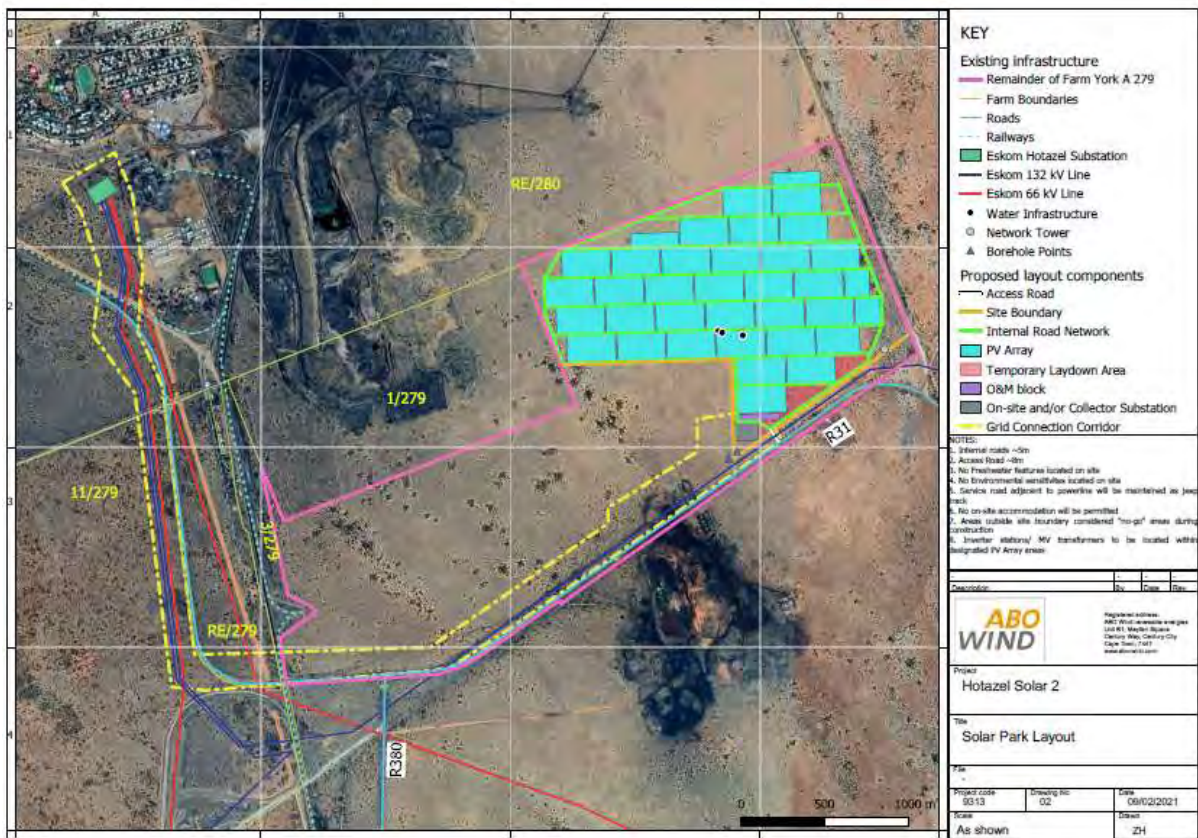


Figure 1: Layout Map

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the

impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

Signature Proponent/applicant/ holder of EA

Date: 26 February 2021

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.

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMPr. The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such.

Table 2: Recommended mitigation measures required for the construction, operation and decommissioning of the Hotazel 2 Solar PV development.

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Terrestrial Ecology					
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓	✓	✓	✓	✓

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.		✓	✓		
Avoid sensitive features and habitats when locating infrastructure		✓	✓		
No mass clearing of vegetation for the PV arrays should be allowed. Vegetation to be brush cut and only in exceptional circumstances completely cleared.	✓	✓	✓		
Compile a Rehabilitation Plan		✓	✓	✓	✓
Compile an Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas.		✓	✓	✓	✓
Where possible, access roads should be located along existing farm, access and district roads		✓	✓		
Access to sensitive areas outside of development footprint should not be permitted during construction.		✓	✓		
Undertake monitoring to evaluate whether further measures would be required to manage impacts.		✓	✓	✓	
Undertake a biodiversity walkthrough of the site prior to construction.	✓	✓	✓		
A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads.	✓	✓	✓		
If possible, plants should be conserved in situ, along with an appropriate buffer zone around them		✓	✓		
Plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect		✓	✓		
A Plant Rescue Plan must be compiled to be approved by the appropriate authorities.		✓	✓		
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓		✓		
No speeding on access roads – install speed control measures, such as speed humps, if necessary		✓	✓		
No hunting of protected species.		✓	✓		
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species.		✓	✓		
Report any sitings to conservation authorities		✓	✓	✓	
Undertake dust fall-out monitoring and manage, where necessary	✓	✓	✓		
Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. This should include any areas within proximity to the project that may be affected by the project, or that could have an influence on invasion by alien invasive plants into the property		✓	✓	✓	
Undertake regular monitoring to detect alien invasions early so that they can be controlled.		✓	✓	✓	
Avoid development of designated sensitive habitats		✓	✓		
Appropriate lighting should be installed to minimize impacts on nocturnal animals.		✓	✓	✓	
Construction activities should not be undertaken at night.		✓	✓		
Compile and implement a stormwater management plan, which highlights control priorities and areas and provides a programme for long-term control		✓	✓		
Undertake regular monitoring to detect erosion features early so that they can be controlled		✓	✓	✓	

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Avoid building on or near steep or unstable slopes.		✓	✓		
No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities		✓		✓	
Additional infrastructure to be located adjacent to existing infrastructure		✓		✓	
No driving of vehicles off-road		✓		✓	
No illegal collecting of any individual fauna or flora		✓	✓	✓	
No hunting of protected species or hunting of any other species without a valid permit.		✓	✓	✓	
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species		✓	✓	✓	
Avifaunal					
Activity should as far as possible be restricted to the footprint of the infrastructure.		✓	✓		✓
Measures to control noise and dust should be applied according to current best practice in the industry.		✓	✓		✓
Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.		✓	✓		✓
Access to the rest of the property must be restricted.		✓	✓		
A single perimeter fence should be used .		✓		✓	
With regards to the infrastructure within the substation yard and inverter station, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.		✓		✓	
Palaeontology					
Implementation of a chance find procedure		✓	✓		
Visual					
Investigate the possibility of undertaking screening		✓	✓		
Plan to maintain the height of structures as low as possible;		✓	✓		
Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development		✓	✓		
Reinstate any areas of vegetation that have been disturbed during construction		✓	✓		
Remove all temporary works		✓		✓	
Monitor rehabilitated areas post-construction and implement remedial actions;		✓		✓	
Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.		✓		✓	
Remove infrastructure not required for the post-decommissioning use of the site		✓			✓
All alien plant re-growth must be monitored and should these alien plants reoccur these plants should be re-eradicated. The scale of the development does however not warrant the use of a Landscape Architect and / or Landscape Contractor.		✓	✓		
It is further recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset to ensure a net benefit to the environment within all areas that will remain undisturbed.		✓	✓	✓	
Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off		✓	✓		
Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be included in the EMP to mitigate these impacts.		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Any stormwater within the development area must be handled in a suitable manner, i.e. separate clean and dirty water streams around the plant, and install stilling basins to capture large volumes of run-off, trap sediments and reduce flow velocities (e.g. water used when washing the PV Panels).		✓	✓	✓	
Suitable stormwater management features with erosion control measures (gabions) should also be installed in areas where concentrated flows are anticipated		✓	✓		
Strict use and management of all hazardous materials used on site.		✓	✓		
Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / banded areas		✓	✓		
Containment of all contaminated water by means of careful run-off management on site.		✓	✓		
Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated water courses or the buffers shown		✓	✓		
Strict control of the behaviour of construction workers.		✓	✓		
Appropriate waste management		✓	✓		
Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced.		✓	✓		
Agriculture					
Installation of proper Erosion control, and drainage on the access road.		✓	✓		
Dust control on the access road during construction.		✓	✓		
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature. Existing road alignments are followed and roads upgraded for use during the live span of facility. With the appropriate planning, the same live style can be achieved during the lease period of the facility from the land so occupied by the facility.		✓	✓		
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.		✓	✓		
Ensure that most infrastructure features are erected on transformed or non-arable land. Implement stormwater management as an integral part of planning and as a guideline for the positioning of structures. Use existing roads and conservation structures to the maximum in the planning and operation phases. Rehabilitate disturbed areas as soon as possible after construction.		✓	✓		
Erosion and sediment control with proper water run-off control planning.		✓	✓		
Appropriate handling and storage of chemicals and hazardous substances and waste should be done.		✓	✓		
When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.					
Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.		✓	✓		
Establish structures on the contour. Use grass strips to regulate flow speed		✓	✓		
Social					
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		✓	✓		
Before the construction phase commences the proponent should meet with representatives from the JMLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.		✓	✓		
Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;		✓	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		✓	✓		
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase		✓	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		✓	✓		
The JMLM in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.		✓	✓		
Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;		✓	✓		
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local JMLM Councillor for Ward 2, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers;		✓	✓	✓	
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;		✓	✓	✓	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;		✓	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area;		✓	✓		
The contractor should provide transport for workers to and from the site on a		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.					
Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks:		✓	✓		
The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end;		✓	✓		
It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		✓	✓		
The proponent should implement a policy that no employment will be available at the gate.		✓	✓		
The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;		✓	✓		
The proponent must enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences;		✓	✓		
Traffic and activities should be strictly contained within designated areas		✓	✓		
Strict traffic speed limits must be enforced on the farm		✓	✓		
All farm gates must be closed after passing through		✓	✓		
Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties		✓	✓		
The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below)		✓	✓		
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested		✓	✓		
Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.		✓	✓		
Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation		✓	✓		
The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated;		✓	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;		✓	✓		
Smoking on site should be confined to designated areas;		✓	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle;		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Contractor to provide fire-fighting training to selected construction staff		✓	✓		
Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.		✓	✓		
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits		✓	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase:		✓	✓		
All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase		✓	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed		✓	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO		✓	✓		
Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members; Maximise opportunities for local content, procurement and community shareholding		✓	✓		
The JMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed so as to promote and support local, socio-economic development in the region as a whole.		✓	✓		
The JMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the GLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager		✓	✓		
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;		✓	✓		
Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.		✓	✓		
The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.		✓	✓		
All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning		✓	✓		
Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.		✓	✓		
Traffic					
Stagger component delivery to site .		✓	✓		✓
Reduce the construction period		✓	✓		✓
The use of mobile batch plants and quarries in close proximity to the site		✓	✓		✓
Staff and general trips should occur outside of peak traffic periods.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓
Dust Suppression of gravel roads during the construction phase, as required.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

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

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

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

- No formal roads may be constructed under the powerlines (jeep track access only)
- No pylons to be positioned within 32m of a watercourse
- No structures within 32m of a watercourse

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.

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





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INTRODUCTION

1. Background

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

2. Purpose

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

3. Objective

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

4. Scope

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

5. Structure of this document

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART A – GENERAL INFORMATION

1. DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

2. ACRONYMS and ABBREVIATIONS

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

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

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

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

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

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

Responsible Person(s)	Role and Responsibilities
	<p>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"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor’s Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.

Responsible Person(s)	Role and Responsibilities
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

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

4.1 Document control/Filing system

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

4.2 Documentation to be available

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

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

4.3 Weekly Environmental Checklist

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

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

4.4 Environmental site meetings

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

4.5 Required Method Statements

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

The method statement must cover applicable details with regard to:

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

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

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

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

4.6 Environmental Incident Log (Diary)

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

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

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

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

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

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

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

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

4.8 Corrective action records

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

4.9 Photographic record

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

The Contractor shall:

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

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

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

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

4.10 Complaints register

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

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

4.11 Claims for damages

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

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

4.12 Interactions with affected parties

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

The ECOs shall:

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

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

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes 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.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

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

development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with <i>Section 5.5: Fencing and gate installation</i>; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; – Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

<p>Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.</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"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: <i>photographic record</i>; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<ul style="list-style-type: none"> - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.						
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5.8 Solid and hazardous waste management

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<ul style="list-style-type: none"> - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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5.9 Protection of watercourses and estuaries

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<ul style="list-style-type: none"> - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 *Vegetation clearing*

<p>Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>		
Impact Management Actions	Implementation	Monitoring

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

herbicide usage; – No herbicides must be used in estuaries; – All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to <i>Section 5.3: Access restricted areas</i> . Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.						
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5.11 Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; – The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; – Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; – Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; – No poaching must be tolerated under any circumstances. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>All animal dens in close proximity to the works areas must be marked as Access restricted areas;</p> <ul style="list-style-type: none"> - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in <i>Section 5.3: Access restricted areas</i>; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.						
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5.13 Safety of the public

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.14 Sanitation

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Undertake environmentally-friendly pest control in the camp area; - Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; - Free condoms must be made available to all staff on site at central points; - Medical support must be made available; - Provide access to Voluntary HIV Testing and Counselling Services. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.16 Emergency procedures

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; – The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; – All staff must be made aware of emergency procedures as part of environmental awareness training; – The relevant local authority must be made aware of a fire as soon as it starts; – In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see <i>Hazardous Substances section 5.17</i>). 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 	Contractor	As defined in EMPr and	Throughout construction	ECO	Monthly	ECO reporting

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and 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); 		method statements submitted	period			
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bund area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to <i>Section 5.7</i> for procedures concerning <i>storm and waste water management</i> and <i>5.8</i> for <i>solid and hazardous waste management</i>. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: <i>Storm and waste water management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.19 Batching plants

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <i>Section 5.20: Dust emissions</i>) - Any excess sand, stone and cement must be removed or 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; – Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; – Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; – During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; – Where possible, soil stockpiles must be located in sheltered 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>areas where they are not exposed to the erosive effects of the wind;</p> <ul style="list-style-type: none"> - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.22 Noise

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.24 Stockpiling and stockpile areas

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; - Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Rehabilitation of the disturbed areas must be managed in accordance with <i>Section 5.35: Landscaping and rehabilitation</i>; - All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.26 Excavation of foundation, cable trenching and drainage systems



Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with <i>Section 5.18: Workshop, equipment maintenance and storage</i>; and - Hazardous substances spills from equipment must be managed in accordance with <i>Section 5.17: Hazardous substances</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.27 Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Batching of cement to be undertaken in accordance with Section 5.19: <i>Batching plants</i>; and – Residual solid waste must be disposed of in accordance with Section 5.8: <i>Solid waste and hazardous management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Management of dust must be conducted in accordance with Section 5.20: <i>Dust emissions</i>; – Management of equipment used for installation must be conducted in accordance with Section 5.18: <i>Workshop, equipment maintenance and storage</i>; – Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: <i>Hazardous substances</i>; and – Residual solid waste must be recycled or disposed of in accordance with Section 5.8: <i>Solid waste and hazardous management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.29 Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts - Emergency repairs due to breakages of equipment must be managed in accordance with <i>Section 5.18: Workshop, equipment maintenance and storage</i> and <i>Section 5.16: Emergency procedures</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.30 Cabling and Stringing

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

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

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: <i>Solid waste and hazardous Management</i>; - Management of equipment used for installation shall be conducted in accordance with Section 5.18: <i>Workshop, equipment maintenance and storage</i>; - Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: <i>Hazardous substances</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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
<ul style="list-style-type: none"> - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: <i>Solid waste and hazardous management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.32 Socio-economic

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.33 Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

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

5.34 *Dismantling of old equipment*

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.

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

5.35 *Landscaping and rehabilitation*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: <i>Stockpiling and stockpiled areas</i>); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>area and from the topsoil must be removed;</p> <ul style="list-style-type: none"> - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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6 ACCESS TO THE GENERIC EMPr

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

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

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

7.1.1 Details of the applicant:

Name of applicant: Hotazel Solar Facility 2 (Pty) Ltd

Tel No: + 27 (21) 418 2596

Fax No: + 27 (0) 86 514 8184

Postal Address: 1st Floor, West Quay Building, 7 West Quay Road, Waterfront, Cape Town, 8000

Physical Address: 1st Floor, West Quay Building, 7 West Quay Road, Waterfront, Cape Town, 8000

7.1.2 Details and expertise of the EAP:

Name of EAP: Cape EAPrac – Dale Holder

Tel No: 044 8740365

Fax No: 044 874 0432

E-mail address: dale@cape-eaprac.co.za

Expertise of the EAP (Curriculum Vitae included): Ndip Nat Con 16 years experience in environmental management.

7.1.3 Project name: Substation Infrastructure for Hotazel 2.

7.1.4 Description of the project: Substation Infrastructure for Hotazel 2.

7.1.5 Project location:

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

7.2 Sub-section 2: Development footprint site map

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

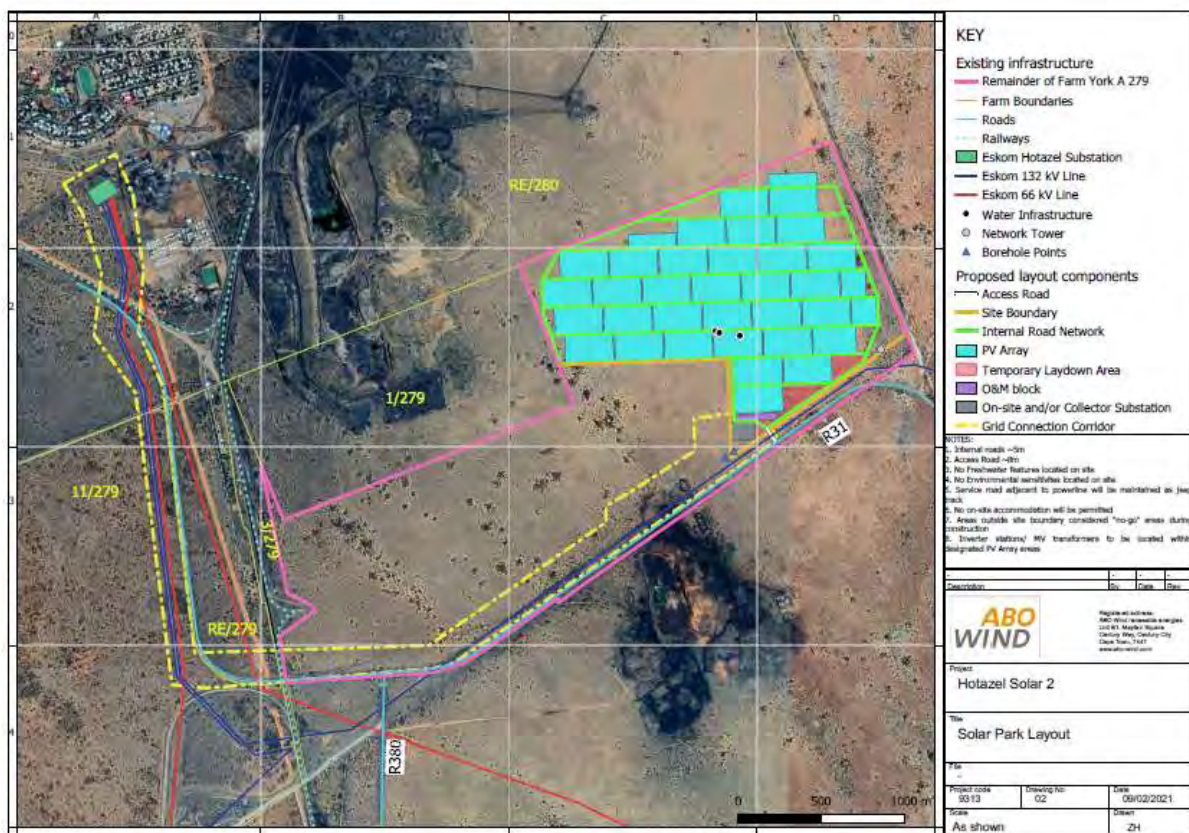


Figure 1: Layout Plan

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the

CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.



Signature Proponent/applicant/ holder of EA

Date: 26 February 2021

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.

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMPr. The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such.

Table 2: Recommended mitigation measures required for the construction, operation and decommissioning of the Hotazel 2 Solar PV development.

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Terrestrial Ecology					
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓	✓	✓	✓	✓
As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.		✓	✓		
Avoid sensitive features and habitats when locating infrastructure		✓	✓		
No mass clearing of vegetation for the PV arrays should be allowed. Vegetation to be brush cut and only in exceptional circumstances completely cleared.	✓	✓	✓		
Compile a Rehabilitation Plan		✓	✓	✓	✓

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Compile an Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas.		✓	✓	✓	✓
Where possible, access roads should be located along existing farm, access and district roads		✓	✓		
Access to sensitive areas outside of development footprint should not be permitted during construction.		✓	✓		
Undertake monitoring to evaluate whether further measures would be required to manage impacts.		✓	✓	✓	
Undertake a biodiversity walkthrough of the site prior to construction.	✓	✓	✓		
A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads.	✓	✓	✓		
If possible, plants should be conserved in situ, along with an appropriate buffer zone around them		✓	✓		
Plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect		✓	✓		
A Plant Rescue Plan must be compiled to be approved by the appropriate authorities.		✓	✓		
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓		✓		
No speeding on access roads – install speed control measures, such as speed humps, if necessary		✓	✓		
No hunting of protected species.		✓	✓		
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species.		✓	✓		
Report any sightings to conservation authorities		✓	✓	✓	
Undertake dust fall-out monitoring and manage, where necessary	✓	✓	✓		
Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. This should include any areas within proximity to the project that may be affected by the project, or that could have an influence on invasion by alien invasive plants into the property		✓	✓	✓	
Undertake regular monitoring to detect alien invasions early so that they can be controlled.		✓	✓	✓	
Avoid development of designated sensitive habitats		✓	✓		
Appropriate lighting should be installed to minimize impacts on nocturnal animals.		✓	✓	✓	
Construction activities should not be undertaken at night.		✓	✓		
Compile and implement a stormwater management plan, which highlights control priorities and areas and provides a programme for long-term control		✓	✓		
Undertake regular monitoring to detect erosion features early so that they can be controlled		✓	✓	✓	
Avoid building on or near steep or unstable slopes.		✓	✓		
No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities		✓		✓	
Additional infrastructure to be located adjacent to existing infrastructure		✓		✓	
No driving of vehicles off-road		✓		✓	

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
No illegal collecting of any individual fauna or flora		✓	✓	✓	
No hunting of protected species or hunting of any other species without a valid permit.		✓	✓	✓	
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species		✓	✓	✓	
Avifaunal					
Activity should as far as possible be restricted to the footprint of the infrastructure.		✓	✓		✓
Measures to control noise and dust should be applied according to current best practice in the industry.		✓	✓		✓
Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.		✓	✓		✓
Access to the rest of the property must be restricted.		✓	✓		
A single perimeter fence should be used .		✓		✓	
With regards to the infrastructure within the substation yard and inverter station, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.		✓		✓	
Palaeontology					
Implementation of a chance find procedure		✓	✓		
Visual					
Investigate the possibility of undertaking screening		✓	✓		
Plan to maintain the height of structures as low as possible;		✓	✓		
Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development		✓	✓		
Reinstate any areas of vegetation that have been disturbed during construction		✓	✓		
Remove all temporary works		✓		✓	
Monitor rehabilitated areas post-construction and implement remedial actions;		✓		✓	
Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.		✓		✓	
Remove infrastructure not required for the post-decommissioning use of the site		✓			✓
All alien plant re-growth must be monitored and should these alien plants reoccur these plants should be re-eradicated. The scale of the development does however not warrant the use of a Landscape Architect and / or Landscape Contractor.		✓	✓		
It is further recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset to ensure a net benefit to the environment within all areas that will remain undisturbed.		✓	✓	✓	
Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off		✓	✓		
Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be included in the EMP to mitigate these impacts.		✓	✓		
Any stormwater within the development area must be handled in a suitable manner, i.e. separate clean and dirty water streams around the plant, and install stilling basins to capture large volumes of run-off, trap sediments and reduce flow velocities (e.g. water used when washing the PV Panels).		✓	✓	✓	
Suitable stormwater management features with erosion control measures (gabions) should also be installed in areas where concentrated flows are		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
anticipated					
Strict use and management of all hazardous materials used on site.		✓	✓		
Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / banded areas		✓	✓		
Containment of all contaminated water by means of careful run-off management on site.		✓	✓		
Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated water courses or the buffers shown		✓	✓		
Strict control of the behaviour of construction workers.		✓	✓		
Appropriate waste management		✓	✓		
Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced.		✓	✓		
Agriculture					
Installation of proper Erosion control, and drainage on the access road.		✓	✓		
Dust control on the access road during construction.		✓	✓		
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature. Existing road alignments are followed and roads upgraded for use during the live span of facility. With the appropriate planning, the same live style can be achieved during the lease period of the facility from the land so occupied by the facility.		✓	✓		
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.		✓	✓		
Ensure that most infrastructure features are erected on transformed or non-arable land. Implement stormwater management as an integral part of planning and as a guideline for the positioning of structures. Use existing roads and conservation structures to the maximum in the planning and operation phases. Rehabilitate disturbed areas as soon as possible after construction.		✓	✓		
Erosion and sediment control with proper water run-off control planning.		✓	✓		
Appropriate handling and storage of chemicals and hazardous substances and waste should be done.		✓	✓		
When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.		✓	✓		
Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Establish structures on the contour. Use grass strips to regulate flow speed		✓	✓		
Social					
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		✓	✓		
Before the construction phase commences the proponent should meet with representatives from the JMLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.		✓	✓		
Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;		✓	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		✓	✓		
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase		✓	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		✓	✓		
The JMLM in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.		✓	✓		
Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;		✓	✓		
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local JMLM Councillor for Ward 2, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers;		✓	✓	✓	
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;		✓	✓	✓	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;		✓	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area;		✓	✓		
The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.		✓	✓		
Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks;		✓	✓		
The contractor must ensure that all construction workers from outside the area		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
are transported back to their place of residence within 2 days for their contract coming to an end;					
It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		✓	✓		
The proponent should implement a policy that no employment will be available at the gate.		✓	✓		
The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;		✓	✓		
The proponent must enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences;		✓	✓		
Traffic and activities should be strictly contained within designated areas		✓	✓		
Strict traffic speed limits must be enforced on the farm		✓	✓		
All farm gates must be closed after passing through		✓	✓		
Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties		✓	✓		
The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below)		✓	✓		
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested		✓	✓		
Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.		✓	✓		
Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation		✓	✓		
The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated;		✓	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;		✓	✓		
Smoking on site should be confined to designated areas;		✓	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle;		✓	✓		
Contractor to provide fire-fighting training to selected construction staff		✓	✓		
Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.		✓	✓		
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits		✓	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
establishment phase of the construction phase;					
All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase		✓	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed		✓	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO		✓	✓		
Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members; Maximise opportunities for local content, procurement and community shareholding		✓	✓		
The JMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed so as to promote and support local, socio-economic development in the region as a whole.		✓	✓		
The JMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the GLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager		✓	✓		
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;		✓	✓		
Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.		✓	✓		
The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.		✓	✓		
All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning		✓	✓		
Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.		✓	✓		
Traffic					
Stagger component delivery to site .		✓	✓		✓
Reduce the construction period		✓	✓		✓
The use of mobile batch plants and quarries in close proximity to the site		✓	✓		✓
Staff and general trips should occur outside of peak traffic periods.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓
Dust Suppression of gravel roads during the construction phase, as required.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓

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.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

(For official use only)

File Reference Number:
NEAS Reference Number:
Date Received:

DEA/EIA/

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Hotazel 2

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP Company Name:	Cape EAPrac			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	0
EAP name:	Dale Holder			
EAP Qualifications:	NDIP Nature Conservation			
Professional affiliation/registration:	IAIAsa EAPASA (pending)			
Physical address:	17 Progress Street			
Postal address:	PO Box 2070, George			
Postal code:	6530	Cell:	082 448 9225	
Telephone:	044 8740365	Fax:	082 4489225	
E-mail:	dale@cape-eaprac.co.za			

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

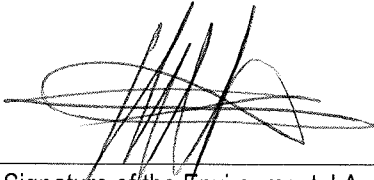
2. DECLARATION BY THE EAP

I, Dale Holder, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~



Signature of the Environmental Assessment Practitioner

Cape EAPrac
P.O. Box 2070 / George 6530
17 Progress Street
Tel: 044 874 0365 Fax: 044 874 0432
Web: www.cape-eaprac.co.za

Cape EAPrac

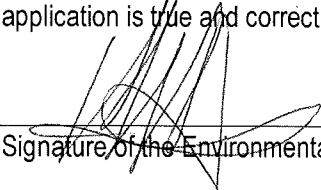
Name of Company:

13 October 2020

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Dale Holder, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



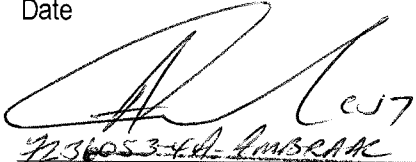
Signature of the Environmental Assessment Practitioner

Cape Environmental Assessment Practitioners

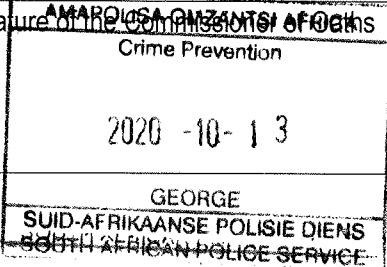
Name of Company

13 October 2020

Date



Signature of the Commissioner of Police



Date

Dale Warren Holder

September 2018



17 Progress Street, George
PO Box 2070, George, 6530
Tel- 044 8740365
Cell – 082 448 9225
Fax – 044 875 0432
dale@cape-eaprac.co.za
www.cape-eaprac.co.za

EDUCATION

Highveld Park High School

Matric
1996

Tshwane University of Technology

National Diploma – Nature Conservation
2000

University of Witwatersrand

Executive Certificate – Environmental Education
2003

WORK EXPERIENCE

Senior Environmental Consultant | Cape EAPrac

2008 - Present

Environmental Consultant | Hilland Associates

2005 - 2008

Project Manager –Working for Coast | SANParks

2003 - 2005

Social Ecologist | SANParks

2001 - 2003

Student Ranger | SANParks

2000 – 2001

CORE COMPETANCIES

Dale has been involved with many road infrastructure projects for over 15 years and has experience and understanding of the planning, regulatory and implementation aspects related to road infrastructure. Further experience include Public Participation & Stakeholder Engagement, GIS & Mapping, Biophysical Inventories, Retrospective Damage Assessment, Air Quality License Applications, Waste Management License Applications, Environmental Impact Assessments, Environmental Management Policies and Plans, Environmental Control, Monitoring and Auditing, Environmental Awareness and Training Programs, Environmental Education and Interpretation and Environmental Feasibility Assessments.

PROFFESIONAL PORTFOLIO

Below is an excerpt of projects managed by Mr Dale Holder in the preceding 10 year period.

ENVIRONMENTAL IMPACT ASSESSMENT

#	Project	Description
243b	Rheebok Brick Mining	Basic Assessment
243a	Rheebok Brick VSBKS	Basic Assessment
259	PSP Timbers	Basic Assessment
420	Botha and Barnard - Wood Dryer	Basic Assessment
406	Vredelus Farm	Basic Assessment
064	Erf 524 Boggomsbaai	Basic Assessment
069	Sedgefield Island Stabilisation	Basic Assessment
084	Moquini Hotel	Basic Assessment
041	Kwanonqaba Mid-Income Housing	Basic Assessment
061	Grootbosch Consolidation	Basic Assessment
040	Heiderand Mid-Income Housing	Basic Assessment
043	Malgas River Pumping Scheme	Basic Assessment
039	D'Almeide Mid-Income Housing	Basic Assessment
214	Techno Asphalt Plant	Basic Assessment
128	Riversdale COP 17 Solar	Basic Assessment
130	Hessequa Charcoal Plant	Basic Assessment
134	Hessequa Solar	Basic Assessment
140	Kannaland Solar Facility	Basic Assessment
141	Dysselsdorp Solar Facility	Basic Assessment
459	Kwanonqutula Sewer	Basic Assessment
481	Zeerust Access Road (New Road)	Basic Assessment
432	AMDA Echo	Scoping & Full EIA
186b	Thembaletu Housing Area 6a&b	Scoping & Full EIA
314	Dyasonsklip Solar Energy Facility 1	Scoping & Full EIA
315	Re Capital 12 Solar Development	Scoping & Full EIA
320	Joram Solar Development	Scoping & Full EIA
232	Baduflo Solar Humansrus	Scoping & Full EIA
233	Badufon Solar Jakkalswater	Scoping & Full EIA
235	Kimbravax Solar Steenkop	Scoping & Full EIA
236	Moipax Solar Uizip	Scoping & Full EIA
237	Badufash Solar Vryheid	Scoping & Full EIA
238	Kimbratime Solar Sandflats	Scoping & Full EIA
239	Moiblox Solar	Scoping & Full EIA
240	Badudex Solar	Scoping & Full EIA
389	Klondike	Scoping & Full EIA
391	AEP Kathu Solar	Scoping & Full EIA
392	AEP Zeerust Solar	Scoping & Full EIA
396	Juno Wind Energy Facility	Scoping & Full EIA
428	AMDA Alpha	Scoping & Full EIA
429	AMDA Bravo	Scoping & Full EIA
430	AMDA Charlie	Scoping & Full EIA
431	AMDA Delta	Scoping & Full EIA
364	Magobe PV	Scoping & Full EIA
369	AEP Legoka	Scoping & Full EIA
381	Ephraim Sun Solar Farm	Scoping & Full EIA

#	Project	Description
368	DK SEF 2 (Original AEP Upington 5)	Scoping & Full EIA
067	Ylands Valley Estate	Scoping & Full EIA
231	Dyasonsklip 1 & 2 (Old RE Capital 3 Solar)	Scoping & Full EIA
135	Skuitdrift Solar S&EIR	Scoping & Full EIA
186	Thembaletu Housing Area 5 & 6	Scoping & Full EIA
000DH	Dale Holder - Admin	Scoping & Full EIA
138	Paulputs Solar EIA	Scoping & Full EIA
158	African Hide	Scoping & Full EIA
170	Ladismith Bulk Water Scheme	Scoping & Full EIA
230	Kimbratrix Solar Die Plaas	Scoping & Full EIA
535	Mogara Solar	Scoping & Full EIA
543	Hotazel Solar	Scoping & Full EIA
532	Legoko Phase 2 & 3 (AEP)	Scoping & Full EIA
428b	AMDA Alpha (Resubmission)	Scoping & Full EIA
429b	AMDA Bravo (Resubmission)	Scoping & Full EIA
430b	AMDA Charlie (Resubmission)	Scoping & Full EIA
534	Gaetsewe Solar	Scoping & Full EIA
433	AMDA Foxtrot	Scoping & Full EIA

ENVIRONMENTAL CONTROL AND MONITORING

#	Project	Description
279	Thembaletu Area 4b Civils	ECO - Environmental Control Officer
266	Thembaletu 4b Pumping Station	ECO - Environmental Control Officer
319	Uniondale Housing	ECO - Environmental Control Officer
289	Ladismith Flood Damage	ECO - Environmental Control Officer
270	Main Rd 348	ECO - Environmental Control Officer
265	Thembaletu Filling Station	ECO - Environmental Control Officer
338	Tsitsikamma Toll Road	ECO - Environmental Control Officer
353	Dysselsdorp Road Rehab	ECO - Environmental Control Officer
375	Ladismith Boreholes	ECO - Environmental Control Officer
043b	Malgas River Pumping Scheme	ECO - Environmental Control Officer
089	Serpentine Rd	ECO - Environmental Control Officer
092	Saasveld Reservoir	ECO - Environmental Control Officer
106	Riversdale Rd	ECO - Environmental Control Officer
074	Grootrivier Road Rehab	ECO - Environmental Control Officer
022a	Gondwana Game Reserve	ECO - Environmental Control Officer
047	Main Road 582	ECO - Environmental Control Officer
187	Outeniqua Pass	ECO - Environmental Control Officer
224	Thembaletu 4a	ECO - Environmental Control Officer
193	Thembaletu Bulk Water Pipeline	ECO - Environmental Control Officer
147	Slangrivier WWTW	ECO - Environmental Control Officer
151	Ladismith Calitsdorp	ECO - Environmental Control Officer
165	Greenfields Thembaletu	ECO - Environmental Control Officer
489	Thembaletu Area 3	ECO - Environmental Control Officer
490	Thembaletu Area 8 a & b	ECO - Environmental Control Officer
520	Portion 5 of Matjiesfontein 304	ECO - Environmental Control Officer
494	Golden Valley Housing Scheme	ECO - Environmental Control Officer
470	Herbertsdale Road	ECO - Environmental Control Officer
513	Main Road 344	ECO - Environmental Control Officer

#	Project	Description
491	Thembalathu Area 8c	ECO - Environmental Control Officer
554	Scatec Construction	ECO - Environmental Control Officer
084b	Moquini Hotel	ECO - Environmental Control Officer
438	Friemersheim DR 1578	ECO - Environmental Control Officer

ATMOSPHERIC EMISSIONS LICENCING AND ASSESSMENT

#	Project	Description
282	Houttek	Air Emission Licence (AEL)
310	Klein Karoo International Abattoir	Air Emission Licence (AEL)
269	Spitskop Stene	Air Emission Licence (AEL)
258	Riversdal Saagmeule	Air Emission Licence (AEL)
412	George Timber & Pallets	Air Emission Licence (AEL)
423	Geelhoutvlei Timbers	Air Emission Licence (AEL)
228	Klein Karoo Abattoir	Air Emission Licence (AEL)
360	Cape Bentonite	Air Emission Licence (AEL)
243c	Rheebok Brick AEL	Air Emission Licence (AEL)
374	Du Toit Stene	Air Emission Licence (AEL)
177	Much Asphalt	Air Emission Licence (AEL)
183	PG Bison	Air Emission Licence (AEL)
185	RheebokBrick	Air Emission Licence (AEL)
190	Kurlandbrik	Air Emission Licence (AEL)
216	Johnsons Bricks	Air Emission Licence (AEL)
217	WilCross Timbers	Air Emission Licence (AEL)
225	George Crematorium	Air Emission Licence (AEL)
226	Koffieklip Houtprodukte	Air Emission Licence (AEL)
161	Klein Karoo International Tannery	Air Emission Licence (AEL)
258b	Riversdale Saagmeule	Air Emission Licence (AEL)
161b	Klein Karoo Tannery	Air Emission Licence (AEL)
183b	PG Bison AEL Renewal	Air Emission Licence (AEL)
485	South Cape Galvanisers	Air Emission Licence (AEL)
487	South Cape Poles	Air Emission Licence (AEL)
564	Johnsons Bricks	Air Emission Licence (AEL)
310b	KKI Abattoir	Air Emission Licence (AEL)

RETROSPECTIVE ASSESSMENTS

#	Project	Description
439	Boskor Wood Drying	22a Rectification (NEMAQA)
053	Ruigtevlei Road	24G (NEMA)
090	WitEls Bridge	24G (NEMA)
059	Scot Tannery	24G (NEMA)
227	Kango Clay Bricks	24G (NEMA)
523	Waterkloof	24G (NEMA)

OTHER PROFESSIONAL SERVICES

#	Project	Description
565	South Cape Galvanising	Variation Application
388	Straussheim PV Solar	Professional Input
190b	Kurlandbrik	Variation Application
434	Zeerust Expansion Area	Basic Assessment
022d	Gondwana Game Reserve	Environmental Audit
278	Thembaletu Area 1, 2 & 3	Amendment Application
283	Touwsriver EA Amendment	Amendment Application
231a	Dyasonsclip 1 & 2 plus Sirius Grid Amendment	Amendment Application
022b	Gondwana Game Reserve (Lodge Footprints)	Amendment Application
022c	Gondwana Game Reserve (Horseback Lodge)	Amendment Application
030	Klapmuts Erf 1336 Phase 2	Amendment Application
434b	Zeerust Expansion Area - EA Amendment	Amendment Application (Extension)
008	Oubaai Golf Estate Imvelo Awards	Audit
042	Kraaibosch Environmental Audit	Audit
380	Thembaletu Area 3	CEMP - Construction Phase EMP
370	Knysna N2 (T128) Sewer	CEMP - Construction Phase EMP
362	Dysselsdorp Rising Main (E1832)	CEMP - Construction Phase EMP
191a	Thembaletu Housing Area 8 A, B & C	CEMP - Construction Phase EMP
372	Thembaletu Area 3	CEMP - Construction Phase EMP
378	Thembaletu TRA	CEMP - Construction Phase EMP
379	Thembaletu Area 8 a, b & c	CEMP - Construction Phase EMP
119	Upington Road EMP	CEMP - Construction Phase EMP
244	Botha & Barnard	Clarification Application
424	Erf 230 Hoekwil - Albo van Dyk	Clarification Application
483	Kwanokuthula Bulk Water Rising Main (Phase 1)	Clarification App, EMP & ECO
447	Adams Solar	DAFF Permit
446	Bellatrix Solar	DAFF Permit
038	Percy Mdala School Exchange Programme	Environmental Education
514	House Bowers (Langvlei Dunes)	Environmental Sensitivity Analysis
271	IPP PV Solar Mossel Bay	Feasibility Study
264	Dana Bay Sewer Pump Station & Rising Main	Feasibility Study
037	Baakensrug Resort Feasibility Assessment	Feasibility Study
254	Bitumen Emulsion Plant	Clarification Application
169	Thembaletu Transitional Housing Area	Clarification Application
062	Milkwood Rise OEMP	OEMP - Operational Phase EMP
105	Matatiele Road EMP	OEMP - Operational Phase EMP
016	Mitchells Plain District Hospital	Open Space Management Plan
518	House Pullen	OSCA Exemption
334	Erf 3790 Cola Beach	OSCA Permit Application
425	OSCA Permit Portion 27 of 23 of Farm 186	OSCA Permit Application
023	Portion 3 of 189 Boven Langevallei	OSCA Permit Application
048	Prt 13 of 189 Boven-Langvlei	OSCA Permit Application
164	OSCA Bo-Langevallei	OSCA Permit Application
524	Erf 321 Wilderness - OSCA & DAFF	OSCA Permit Application
505	House Basson	OSCA Permit Application
468	Portion 111 of Portion 2 Farm 189	OSCA Permit Application
462	Botha & Barnard OSCA	OSCA Permit Application
547	Prt 112 Hansmoeskraal 202	OSCA Permit Application
300	Dust Emissions Management Plan	Professional Services
287	Rooiboskraal Rehab	Professional Services

#	Project	Description
302	Outeniqua Game Farm	Professional Services
304	Helio 100	Professional Services
403	Prins Albert Constraints for WTW	Professional Services
325	K1 Quarry Water Sampling	Professional Services
AEP	AEP General Advisory Services	Professional Services
342	Graaf Reinette WWTW	Professional Services
332	Zeerust Solar - Amendments	Professional Services
DJEC	DJEC Professional Services	Professional Services
066	Vela VKE ITP	Professional Services
005	Destiny Africa	Professional Services
052	West Coast Biosphere	Professional Services
199	PRT Oudtshoorn	Professional Services
112	Erf 596 George	Professional Services
195	Prt 1 Riet Valley Rehab	Professional Services
203	PRT George	Professional Services
290	Milkwood 7 Gondwana	Professional Services
175	Prt 11 Langefontein 452	Professional Services
202	PRT Hessequa	Professional Services
163	Erf 1824 & Rem 1823 Paradys Beach	Professional Services
148	Human Settlements	Professional Services
522	Kannaland Emergency Scheme	Professional Services
541	Swartberg River Dam	Professional Services
496	Sturdee Energy - Due Diligence	Professional Services
460	SCOTT Tannery AEL renewal	Public Participation



an agency of the
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T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 16163

Date: Tuesday March 30, 2021
Page No: 1

Final Comment

In terms of Section 38(4), 38(8) of the National Heritage Resources Act (Act 25 of 1999)

Attention: Hotazel Solar Facility 2 (Pty) Ltd

The proposed Hotazel 2 solar photovoltaic (PV) facility will have a net generating capacity of 100 MWAC with an estimated maximum footprint of ± 230 ha on The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

Cape EAPrac has been appointed by Hotazel Solar Facility 2 (Pty) Ltd to conduct an Environmental Authorisation (EA) Application for the proposed Hotazel 2 PV facility on The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province (DEFF Reference: 14/12/16/3/3/2/2017).

A draft Environmental Impact Assessment (EIA) Report has been submitted in terms of the National Environmental Management Act, 1998 (NEMA) and the 2017 NEMA Environmental Impact Assessment (EIA) Regulations. The proposed development will cover 230 ha and will include PV panels, laydown areas, grid connections, powerlines, auxiliary buildings and access roads.

Natura Viva CC, Dr Lita Webley and Madelon Tusenius were appointed to provide heritage specialist input as required by section 24(4)b(iii) of NEMA and section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

Almond, J. E. 2021. Recommended Exemption from further Palaeontological Studies: Proposed PV Solar Facility on York A, Farm No 279 (Portion 0) near Hotazel, Joe Morolong Local Municipality, Northern Cape.

The proposed development area is underlain by Quaternary to Recent aeolian sands of the Gordonia Formation which are underlain at depth by thick calcretes hard pans of the Mokolanen Formation and sandy, gravelly deposits of the Kalahari Group. The Gordonia sands are sparsely fossiliferous, low diversity invertebrate burrows are recorded in the calcretes and trace fossils may be present in the Kalahari sediments. The impact significance of the proposed development footprint is very low, and a Chance Fossil Finds



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Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 16163

Date: Tuesday March 30, 2021
Page No: 2

Procedure is recommended to be followed and is provided in the report.

Webley, L and Tusenius, M. 2021. Archaeological Impact Assessment: Proposed Hotazel Solar Facility 2 (100 MW) on Remainder Farm York A 279 and 132 kV Grid Connection on Remainder of Farm Hotazel 280, Remainder of Portion 3 of Farm York A 279 and Portion 11 of Farm York A 279, John Taolo Gaetsewe District Municipality, Northern Cape.

The report used results of a 2018 field survey, noting that no heritage resources were identified within the proposed development footprint including the powerlines and substations. Recommendations provided in the report include the need for a Chance Finds Procedure to be included in the EMPr.

The Visual Impact Assessment conducted as part of the EIA states that the proposed development is unlikely to result in significant degradation of the surrounding visual resources.

Final Comment

The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final EIA and EMPr:

- 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development;
- 38(4)b – The recommendations of the specialists are supported and must be adhered to. No further additional specific conditions are provided for the development;
- 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- 38(4)d – See above;

Our Ref:



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P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za

Date: Tuesday March 30, 2021
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- 38(4)e – The following conditions apply with regards to the appointment of specialists:
- With reference to the mitigation work noted above, a qualified archaeologist must be appointed to undertake the work in terms of the permit applied for as noted above;
- If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;
- The Final EIA and EMPr must be uploaded to the SAHRIS application for record purposes;
- The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

Natasha Higgitt
Heritage Officer
South African Heritage Resources Agency

Phillip Hine
Manager: Archaeology, Palaeontology and Meteorites Unit
South African Heritage Resources Agency

Our Ref:



an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
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Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 16163

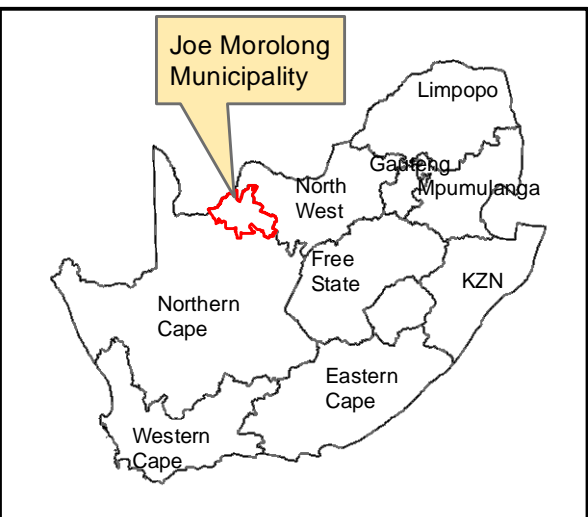
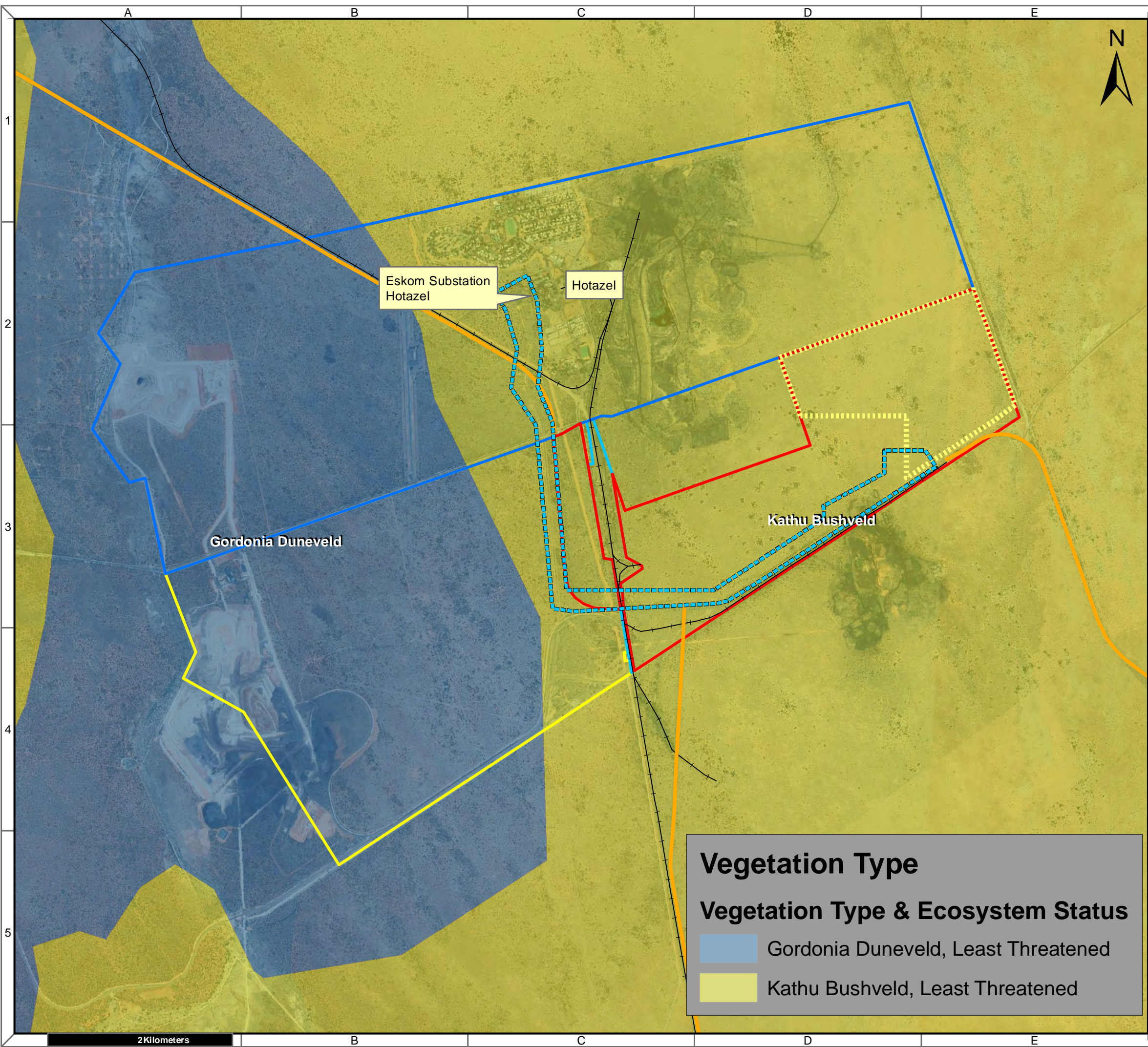
Date: Tuesday March 30, 2021
Page No: 4

ADMIN:

Direct URL to case: <https://sahris.sahra.org.za/node/561087>
(DEA, Ref: 14/12/16/3/3/2/2017)

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.



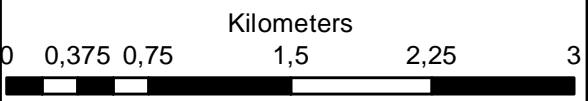
**Hotazel Solar 2
Remaining Extent of Farm
York A 279**

Legend

- H2_Grid_Corridor
- H2_Site boundary
- MAIN ROAD
- Railway Lines
- Remaining Extent of 279
- Remaining Extent of 280
- Portion_3_of_279
- Portion 11 of 279

Notes

- Map Scale is 1: 40 000 when printed on A3
- Aerial image courtesy of Google Earth Pro 2020
- Imagery date December 2018
- Biodiversity data courtesy of SANBI BGIS 2018
- Vegetation data updated as of 2018

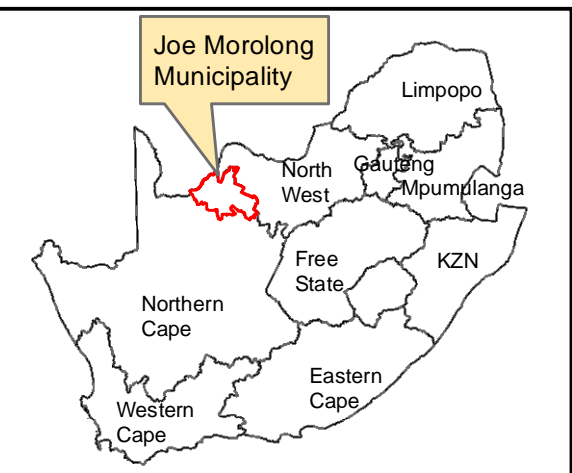


Map Drawn By:	Date	Reference
Melissa Mackay	2020/06/24	JMO637

Vegetation Type

Vegetation Type & Ecosystem Status

- Gordonia Duneveld, Least Threatened
- Kathu Bushveld, Least Threatened



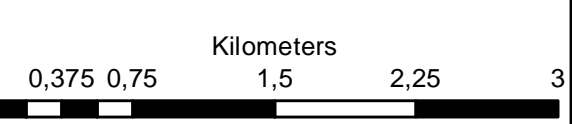
Hotazel Solar 2 Remaining Extent of Farm York A 279

Legend

- H2_Site boundary
- H2_Grid_Corridor
- MAIN ROAD
- Railway Lines
- Remaining Extent of 279
- Remaining Extent of 280
- Portion_3_of_279
- Portion 11 of 279

Notes

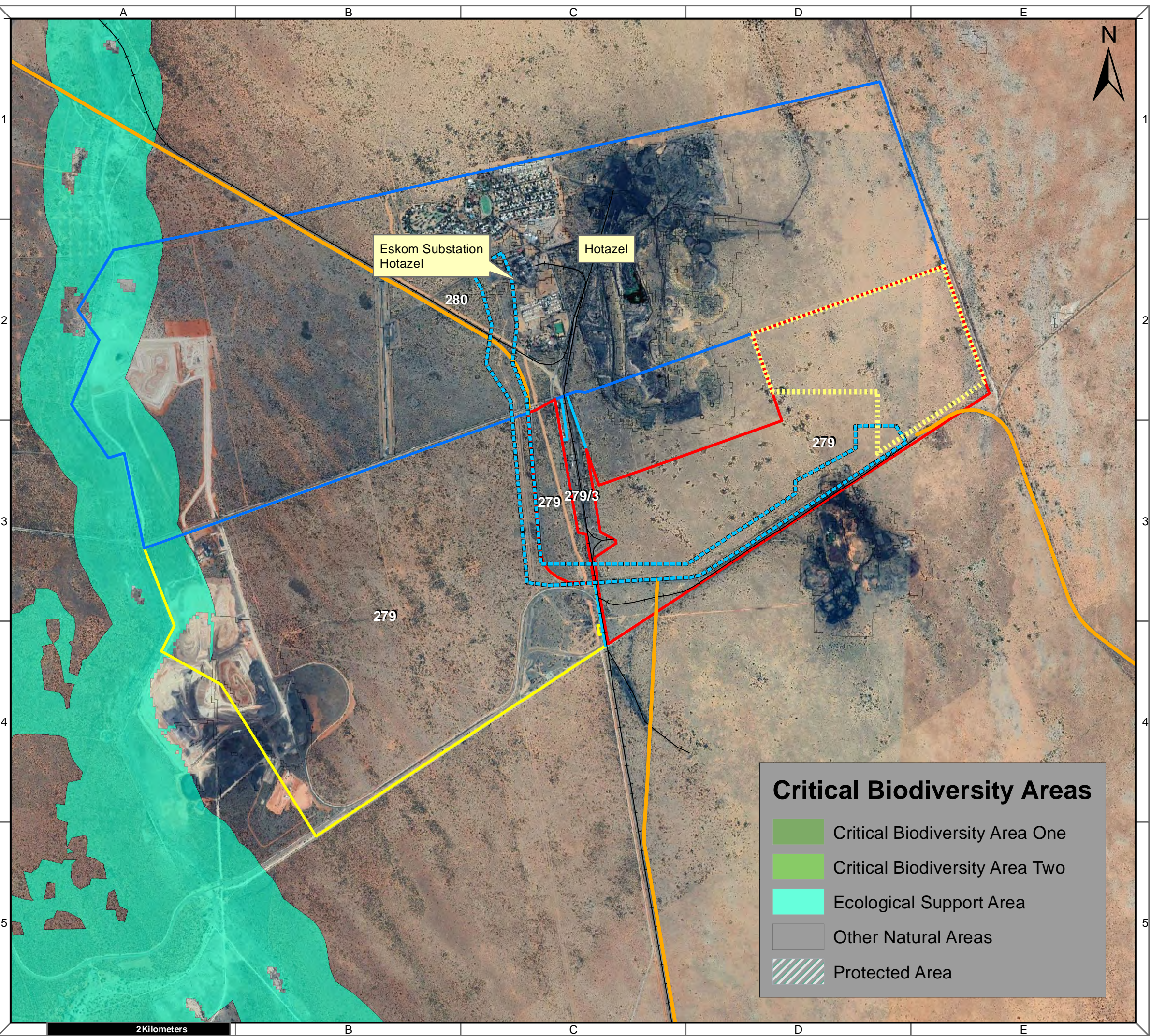
- Map Scale is 1: 35 000 when printed on A3
- Aerial image courtesy of Google Earth Pro 2020
- Imagery date December 2018
- Biodiversity data courtesy of SANBI BGIS 2018
- NC CBA dated 2016



Map Drawn By:	Date	Reference
Melissa Mackay	2020/06/24	JMO637

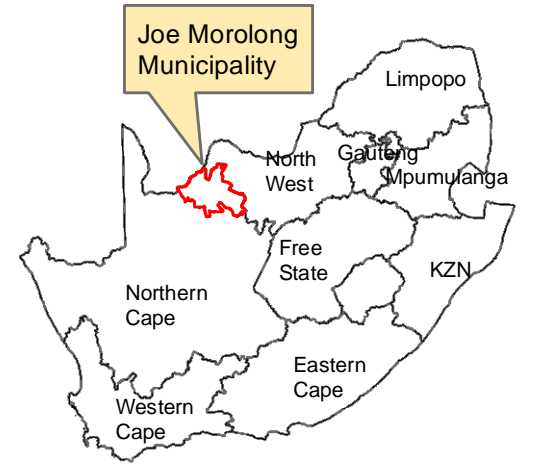
Cape Environmental Assessment Practitioners (Pty) Ltd
 Telephone: +27 44 874 0365
 Facsimile: +27 44 874 0432
 Web: www.cape-eaprac.co.za
 17 Progress St
 PO Box 2070
 George 6530

CRITICAL BIODIVERSITY AREAS



Critical Biodiversity Areas

- Critical Biodiversity Area One
- Critical Biodiversity Area Two
- Ecological Support Area
- Other Natural Areas
- Protected Area



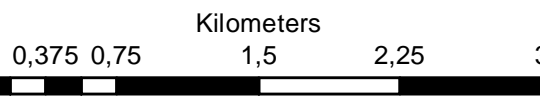
**Hotazel Solar 2
Remaining Extent of Farm
York A 279**

Legend

- H2_Grid_Corridor
- H2_Site boundary
- MAIN ROAD
- Railway Lines
- Remaining Extent of 279
- Remaining Extent of 280
- Portion_3_of_279
- Portion 11 of 279

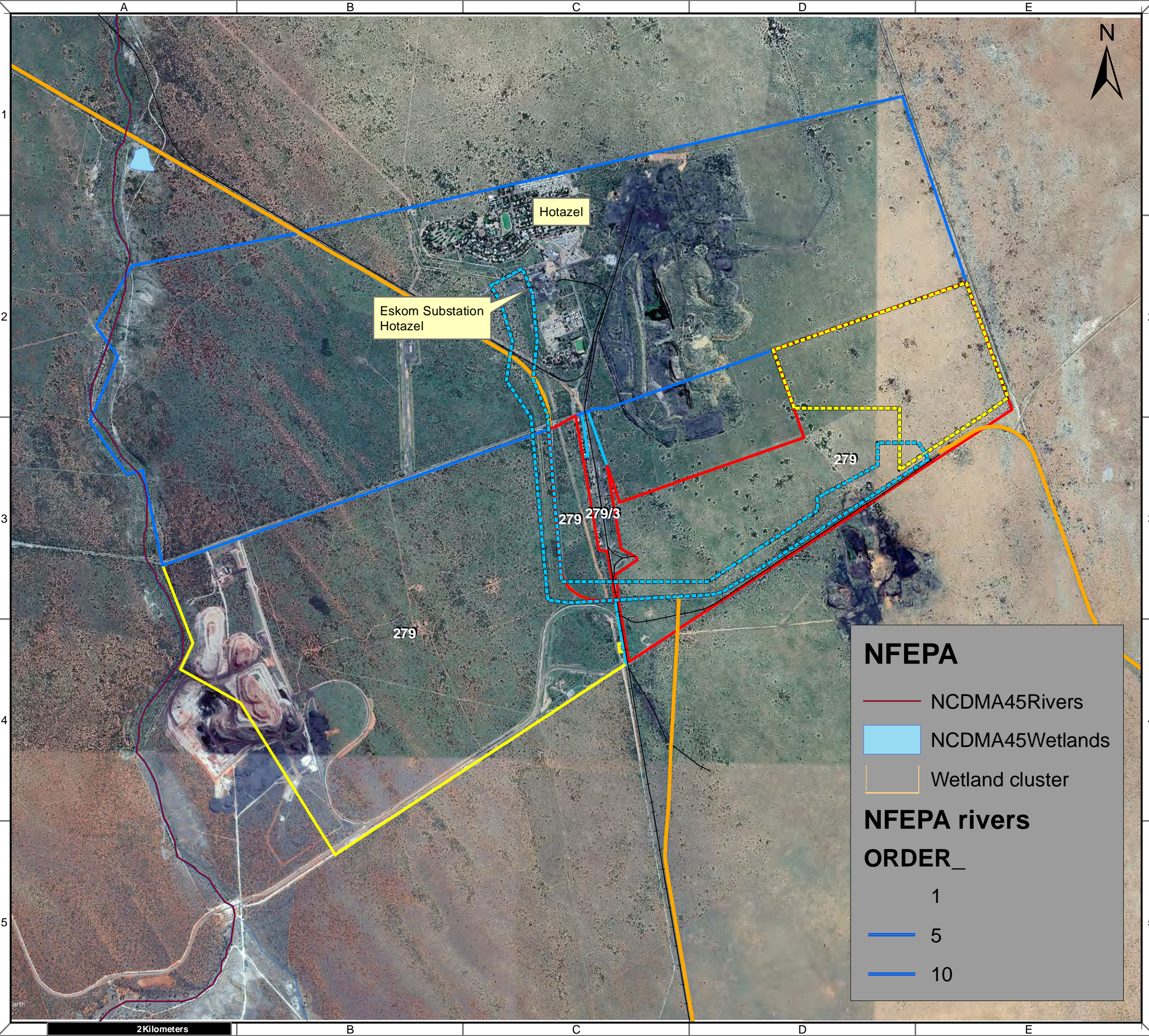
Notes

- Map Scale is 1: 40 000 when printed on A3
- Aerial image courtesy of Google Earth Pro 2020
- Imagery date May 2015
- Biodiversity data courtesy of SANBI BGIS 2018



Map Drawn By:	Date	Reference
Melissa Mackay	2020/06/24	JMO637

Cape Environmental Assessment Practitioners (Pty) Ltd
 Reg. No. 2003/004637/07
 Telephone: +27 44 874 0365
 Facsimile: +27 44 874 0432
 Web: www.cape-eaprac.co.za
 17 Progress St
 PO Box 2070
 George 6530



NFEPA

- NCDMA45Rivers
- NCDMA45Wetlands
- Wetland cluster

NFEPA rivers

ORDER_

- 1
- 5
- 10

2 Kilometers

APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY
TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

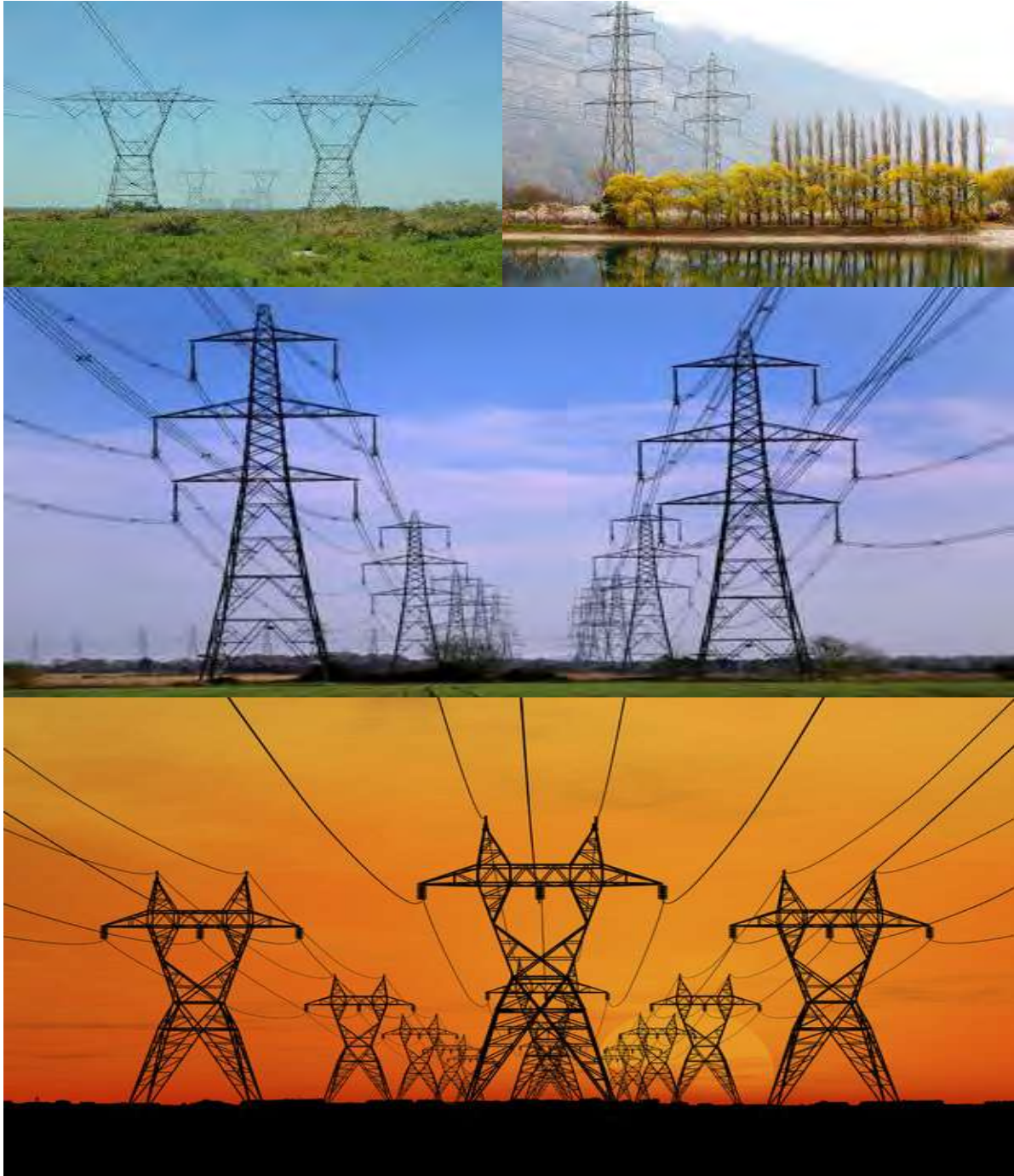


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INTRODUCTION

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 overhead electricity transmission and distribution infrastructure, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

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

4. Scope

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

5. Structure of this document

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART A – GENERAL INFORMATION

1. DEFINITIONS

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

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

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

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

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

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

The method statement must cover applicable details with regard to:

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

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

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

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

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

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

2. ACRONYMS and ABBREVIATIONS

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

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

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

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

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

Responsible Person (s)	Role and Responsibilities
	<p>is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the 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>

Responsible Person (s)	Role and Responsibilities
	<p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer	<u>Role</u>

Responsible Person (s)	Role and Responsibilities
(dEO)	<p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where</p>

Responsible Person (s)	Role and Responsibilities
	<p>specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA,

Responsible Person (s)	Role and Responsibilities
	<p>EMPr and Method Statements;</p> <ul style="list-style-type: none"> - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

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

4.1 Document control/Filing system

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

4.2 Documentation to be available

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

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

4.3 Weekly Environmental Checklist

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

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

4.4 Environmental site meetings

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

4.5 Required Method Statements

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

The method statement must cover applicable details with regard to:

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

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

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

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

4.6 Environmental Incident Log (Diary)

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

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

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

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

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

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

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

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

4.8 Corrective action records

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

4.9 Photographic record

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

The Contractor shall:

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

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

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

4.10 Complaints register

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

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

4.11 Claims for damages

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

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

4.12 Interactions with affected parties

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

The ECOs shall:

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

4.13 Environmental audits

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

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

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

4.14 Final environmental audits

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

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

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

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

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

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

5.1 Environmental awareness training

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

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

<p>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> <ul style="list-style-type: none"> - A record of all environmental awareness training courses undertaken as part of the EMP must be available; - Educate workers on the dangers of open and/or unattended fires; - A staff attendance register of all staff to have received environmental awareness training must be available. - Course material must be available and presented in appropriate languages that all staff can understand. 						
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5.2 Site Establishment development



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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with <i>Section 5.5: Fencing and gate installation</i>; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 	Main contractor	Submission of method statement	Prior to specific activity	ECO	Monthly	ECO Report

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; – Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited. 	Contractor	As defined	Prior to construction	ECO	Monthly	ECO Report

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; 	Contractor		continuous	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; - All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition - All contractors must be made aware of all these access routes. - Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; - Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; - In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with <i>section 4.9: photographic record</i>; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on pre-planned and approved roads. 						
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5.5 *Fencing and Gate installation*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: <i>photographic record</i>; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access 	Contractor	As defined	Prior to construction and continually	ECO	Monthly	ECO Report

<p>restricted areas, where appropriate and would not cause harm to the sensitive flora;</p> <ul style="list-style-type: none"> - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>or cross it and does not operate from within the river;</p> <p>b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and</p> <p>c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.</p> <p>– Ensure water conservation is being practiced by:</p> <p>a. Minimising water use during cleaning of equipment;</p> <p>b. Undertaking regular audits of water systems; and</p> <p>c. Including a discussion on water usage and conservation during environmental awareness training.</p> <p>d. The use of grey water is encouraged.</p>						
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5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; – All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; – Natural storm water runoff not contaminated during the 	Contractor	physical	Throughout construction	ECO	Monthly	ECO report

<p>development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <ul style="list-style-type: none"> – Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 						
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5.8 Solid and hazardous waste management

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

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

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

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 *Vegetation clearing*

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>pest control operator or is appropriately trained;</p> <ul style="list-style-type: none"> - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to <i>Section 5.3: Access restricted areas</i>. <p>Servitude:</p> <ul style="list-style-type: none"> - Vegetation that does not grow high enough to cause interference with overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager; - Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land owner and the EA holder - Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; - Vegetation must be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280; - Debris resulting from clearing and pruning must be disposed of at a recognised waste disposal facility, unless the landowners wish to retain the cut vegetation; - In the case of the development of new overhead transmission and distribution infrastructures, a one metre "trace-line" must be cut through the vegetation for stringing 						
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purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing which limit impact to the environment must always be considered.						
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5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Nesting sites on existing parallel lines must be documented; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Minimise impact to heritage resources.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in <i>Section 5.3: Access restricted areas</i>; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

remove/collect such material before development recommences.						
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5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.14 Sanitation

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

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.15 Prevention of disease



Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Undertake environmentally-friendly pest control in the camp area; - Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; - Free condoms must be made available to all staff on site at central points; - Medical support must be made available; - Provide access to Voluntary HIV Testing and Counselling Services. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.16 *Emergency procedures*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see <i>Hazardous Substances section 5.17</i>). 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and 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); 						
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bund area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to <i>Section 5.7</i> for procedures concerning <i>storm and waste water management</i> and <i>5.8</i> for <i>solid and hazardous waste management</i>. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance <i>Section 5.7: storm and waste water management</i>. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Concrete mixing must be carried out on an impermeable surface; – Batching plants areas must be fitted with a containment facility for the collection of cement laden water. – Dirty water from the batching plant must be contained to prevent soil and groundwater contamination – Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; – A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; – Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; – Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; – Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <i>Section 5.20: Dust emissions</i>) 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; - Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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5.20 Dust emissions

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>acceptable level;</p> <ul style="list-style-type: none"> - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 *Blasting*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

activity taking place on Site.						
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5.22 Noise

Impact Management outcome: Unnecessary noise is prevented by ensuring that noise from construction activities is mitigated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.24 Stockpiling and stockpile areas

Impact management outcome: Erosion and sedimentation as a result of stockpiling are reduced.

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

5.25 Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - No vegetation clearing must occur during survey and pegging operations; - No new access roads must be developed to facilitate access for survey and pegging purposes; - Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; - The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.26 Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with <i>Section 5.18: Workshop equipment maintenance and storage</i>; and - Hazardous substances spills from equipment must be 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>managed in accordance with <i>Section 5.17: Hazardous substances</i>.</p> <ul style="list-style-type: none"> – Batching of cement to be undertaken in accordance with <i>Section 5.19 : Batching plants</i>; – Residual cement must be disposed of in accordance with <i>Section 5.8: Solid and hazardous waste management</i>. 						
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5.27 *Assembly and erecting towers*

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; – In sensitive areas, tower assembly must take place off-site or away from sensitive positions; – The crane used for tower assembly must be operated in a manner which minimises impact to the environment; – The number of crane trips to each site must be minimised; – Wheeled cranes must be utilised in preference to tracked cranes; – Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>of environmental impact;</p> <ul style="list-style-type: none"> - Access to tower positions to be undertaken in accordance with access requirements in specified in Section 8.4: Access Roads; - Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing; - No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor; - Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; - Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; - Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; - Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed; - Only existing disturbed areas are utilised as spoil areas; - Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; - Surface water runoff is appropriately channeled through or around spoil areas; - During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that; - The surface of the spoil is appropriately rehabilitated in 						
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<p>accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;</p> <ul style="list-style-type: none"> - The retained topsoil must be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season. 						
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5.28 Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas; - The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; - Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<ul style="list-style-type: none"> - In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used; - Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter; - Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing; - No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing; - Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner; - Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries. 						
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5.29 Socio-economic

Impact management outcome: Socio-economic development is enhanced.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

5.30 Temporary closure of site

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

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

5.31 Landscaping and rehabilitation



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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of tower sites and access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to 	Contractor	As defined	Throughout construction	ECO	Monthly	ECO Report

<p>Section 5.24: <i>Stockpiling and stockpiled areas</i>);</p> <ul style="list-style-type: none"> - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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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: Hotazel Solar Facility 2 (Pty) Ltd

Tel No: + 27 (21) 418 2596

Fax No: + 27 (0) 86 611 0882

Postal Address: 101, Block A, West Quay Building, 7 West Quay Road, Waterfront, Cape Town, 8000

Physical Address: 101, Block A, West Quay Building, 7 West Quay Road, Waterfront, Cape Town, 8000

7.1.2 Details and expertise of the EAP:

Name of EAP: Cape EAPrac – Dale Holder

Tel No: 044 8740365

Fax No: 044 874 0111

E-mail address: dale@cape-eaprac.co.za

Expertise of the EAP (Curriculum Vitae included): Ndip nat con 16 years experience in environmental management.

7.1.3 Project name: Hotazel 2

7.1.4 Description of the project: Powerline Infrastructure for Hotazel 2 Solar Energy Facility

7.1.5 Project location:

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

7.16 Preliminary technical specification of the overhead transmission and distribution:

- Length: to be determined (dependant on Alternative)
- Tower parameters
 - Number and types of towers: to be determined
 - Tower spacing (mean and maximum): to be determined
 - Tower height (lowest, mean and height): to be determined
 - Conductor attachment height (mean) to be determined
 - Minimum ground clearance: to be determined

7.2 Sub-section 2: Development footprint site map

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

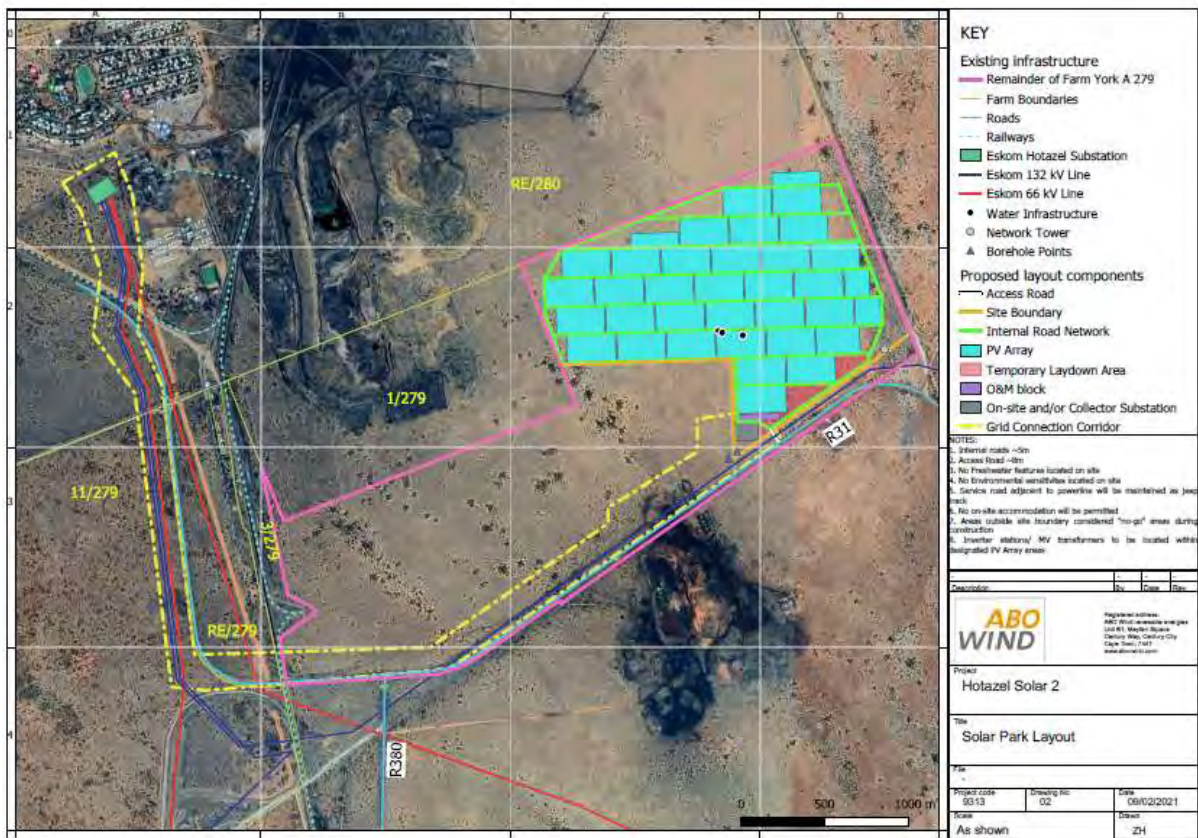


Figure 1: Layout Map

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the

impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

Signature Proponent/applicant/ holder of EA

Date: 26 February 2021

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.

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMPr. The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such.

Table 2: Recommended mitigation measures required for the construction, operation and decommissioning of the Hotazel 2 Solar PV development.

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Terrestrial Ecology					
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓	✓	✓	✓	✓

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.		✓	✓		
Avoid sensitive features and habitats when locating infrastructure		✓	✓		
No mass clearing of vegetation for the PV arrays should be allowed. Vegetation to be brush cut and only in exceptional circumstances completely cleared.	✓	✓	✓		
Compile a Rehabilitation Plan		✓	✓	✓	✓
Compile an Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas.		✓	✓	✓	✓
Where possible, access roads should be located along existing farm, access and district roads		✓	✓		
Access to sensitive areas outside of development footprint should not be permitted during construction.		✓	✓		
Undertake monitoring to evaluate whether further measures would be required to manage impacts.		✓	✓	✓	
Undertake a biodiversity walkthrough of the site prior to construction.	✓	✓	✓		
A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads.	✓	✓	✓		
If possible, plants should be conserved in situ, along with an appropriate buffer zone around them		✓	✓		
Plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect		✓	✓		
A Plant Rescue Plan must be compiled to be approved by the appropriate authorities.		✓	✓		
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓		✓		
No speeding on access roads – install speed control measures, such as speed humps, if necessary		✓	✓		
No hunting of protected species.		✓	✓		
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species.		✓	✓		
Report any sitings to conservation authorities		✓	✓	✓	
Undertake dust fall-out monitoring and manage, where necessary	✓	✓	✓		
Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. This should include any areas within proximity to the project that may be affected by the project, or that could have an influence on invasion by alien invasive plants into the property		✓	✓	✓	
Undertake regular monitoring to detect alien invasions early so that they can be controlled.		✓	✓	✓	
Avoid development of designated sensitive habitats		✓	✓		
Appropriate lighting should be installed to minimize impacts on nocturnal animals.		✓	✓	✓	
Construction activities should not be undertaken at night.		✓	✓		
Compile and implement a stormwater management plan, which highlights control priorities and areas and provides a programme for long-term control		✓	✓		
Undertake regular monitoring to detect erosion features early so that they can be controlled		✓	✓	✓	

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Avoid building on or near steep or unstable slopes.		✓	✓		
No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities		✓		✓	
Additional infrastructure to be located adjacent to existing infrastructure		✓		✓	
No driving of vehicles off-road		✓		✓	
No illegal collecting of any individual fauna or flora		✓	✓	✓	
No hunting of protected species or hunting of any other species without a valid permit.		✓	✓	✓	
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species		✓	✓	✓	
Avifaunal					
Activity should as far as possible be restricted to the footprint of the infrastructure.		✓	✓		✓
Measures to control noise and dust should be applied according to current best practice in the industry.		✓	✓		✓
Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.		✓	✓		✓
Access to the rest of the property must be restricted.		✓	✓		
A single perimeter fence should be used .		✓		✓	
With regards to the infrastructure within the substation yard and inverter station, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.		✓		✓	
Palaeontology					
Implementation of a chance find procedure		✓	✓		
Visual					
Investigate the possibility of undertaking screening		✓	✓		
Plan to maintain the height of structures as low as possible;		✓	✓		
Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development		✓	✓		
Reinstate any areas of vegetation that have been disturbed during construction		✓	✓		
Remove all temporary works		✓		✓	
Monitor rehabilitated areas post-construction and implement remedial actions;		✓		✓	
Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.		✓		✓	
Remove infrastructure not required for the post-decommissioning use of the site		✓			✓
All alien plant re-growth must be monitored and should these alien plants reoccur these plants should be re-eradicated. The scale of the development does however not warrant the use of a Landscape Architect and / or Landscape Contractor.		✓	✓		
It is further recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset to ensure a net benefit to the environment within all areas that will remain undisturbed.		✓	✓	✓	
Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off		✓	✓		
Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be included in the EMP to mitigate these impacts.		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Any stormwater within the development area must be handled in a suitable manner, i.e. separate clean and dirty water streams around the plant, and install stilling basins to capture large volumes of run-off, trap sediments and reduce flow velocities (e.g. water used when washing the PV Panels).		✓	✓	✓	
Suitable stormwater management features with erosion control measures (gabions) should also be installed in areas where concentrated flows are anticipated		✓	✓		
Strict use and management of all hazardous materials used on site.		✓	✓		
Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / banded areas		✓	✓		
Containment of all contaminated water by means of careful run-off management on site.		✓	✓		
Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated water courses or the buffers shown		✓	✓		
Strict control of the behaviour of construction workers.		✓	✓		
Appropriate waste management		✓	✓		
Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced.		✓	✓		
Agriculture					
Installation of proper Erosion control, and drainage on the access road.		✓	✓		
Dust control on the access road during construction.		✓	✓		
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature. Existing road alignments are followed and roads upgraded for use during the live span of facility. With the appropriate planning, the same live style can be achieved during the lease period of the facility from the land so occupied by the facility.		✓	✓		
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.		✓	✓		
Ensure that most infrastructure features are erected on transformed or non-arable land. Implement stormwater management as an integral part of planning and as a guideline for the positioning of structures. Use existing roads and conservation structures to the maximum in the planning and operation phases. Rehabilitate disturbed areas as soon as possible after construction.		✓	✓		
Erosion and sediment control with proper water run-off control planning.		✓	✓		
Appropriate handling and storage of chemicals and hazardous substances and waste should be done.		✓	✓		
When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.					
Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.		✓	✓		
Establish structures on the contour. Use grass strips to regulate flow speed		✓	✓		
Social					
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		✓	✓		
Before the construction phase commences the proponent should meet with representatives from the JMLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.		✓	✓		
Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;		✓	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		✓	✓		
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase		✓	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		✓	✓		
The JMLM in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.		✓	✓		
Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;		✓	✓		
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local JMLM Councillor for Ward 2, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers;		✓	✓	✓	
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;		✓	✓	✓	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;		✓	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area;		✓	✓		
The contractor should provide transport for workers to and from the site on a		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.					
Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks:		✓	✓		
The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end;		✓	✓		
It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		✓	✓		
The proponent should implement a policy that no employment will be available at the gate.		✓	✓		
The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;		✓	✓		
The proponent must enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences;		✓	✓		
Traffic and activities should be strictly contained within designated areas		✓	✓		
Strict traffic speed limits must be enforced on the farm		✓	✓		
All farm gates must be closed after passing through		✓	✓		
Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties		✓	✓		
The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below)		✓	✓		
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested		✓	✓		
Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.		✓	✓		
Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation		✓	✓		
The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated;		✓	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;		✓	✓		
Smoking on site should be confined to designated areas;		✓	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle;		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Contractor to provide fire-fighting training to selected construction staff		✓	✓		
Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.		✓	✓		
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits		✓	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase:		✓	✓		
All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase		✓	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed		✓	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO		✓	✓		
Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members; Maximise opportunities for local content, procurement and community shareholding		✓	✓		
The JMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed so as to promote and support local, socio-economic development in the region as a whole.		✓	✓		
The JMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the GLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager		✓	✓		
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;		✓	✓		
Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.		✓	✓		
The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.		✓	✓		
All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning		✓	✓		
Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.		✓	✓		
Traffic					
Stagger component delivery to site .		✓	✓		✓
Reduce the construction period		✓	✓		✓
The use of mobile batch plants and quarries in close proximity to the site		✓	✓		✓
Staff and general trips should occur outside of peak traffic periods.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓
Dust Suppression of gravel roads during the construction phase, as required.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

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

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

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

- No formal roads may be constructed under the powerlines (jeep track access only)
- No pylons to be positioned within 32m of a watercourse
- No structures within 32m of a watercourse

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.

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





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INTRODUCTION

1. Background

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

2. Purpose

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

3. Objective

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

4. Scope

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

5. Structure of this document

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART A – GENERAL INFORMATION

1. DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

2. ACRONYMS and ABBREVIATIONS

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

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

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

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

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

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

Responsible Person(s)	Role and Responsibilities
	<p>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"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor’s Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.

Responsible Person(s)	Role and Responsibilities
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

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

4.1 Document control/Filing system

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

4.2 Documentation to be available

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

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

4.3 Weekly Environmental Checklist

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

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

4.4 Environmental site meetings

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

4.5 Required Method Statements

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

The method statement must cover applicable details with regard to:

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

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

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

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

4.6 Environmental Incident Log (Diary)

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

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

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

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

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

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

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

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

4.8 Corrective action records

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

4.9 Photographic record

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

The Contractor shall:

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

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

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

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

4.10 Complaints register

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

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

4.11 Claims for damages

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

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

4.12 Interactions with affected parties

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

The ECOs shall:

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

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

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes 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.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

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

development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with <i>Section 5.5: Fencing and gate installation</i>; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; – Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

<p>Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.</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"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: <i>photographic record</i>; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<ul style="list-style-type: none"> - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.						
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5.8 Solid and hazardous waste management

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<ul style="list-style-type: none"> - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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5.9 Protection of watercourses and estuaries

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<ul style="list-style-type: none"> - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 *Vegetation clearing*

<p>Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>		
<p>Impact Management Actions</p>	<p>Implementation</p>	<p>Monitoring</p>

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

herbicide usage; – No herbicides must be used in estuaries; – All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to <i>Section 5.3: Access restricted areas</i> . Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.						
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5.11 Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; – The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; – Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; – Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; – No poaching must be tolerated under any circumstances. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>All animal dens in close proximity to the works areas must be marked as Access restricted areas;</p> <ul style="list-style-type: none"> - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in <i>Section 5.3: Access restricted areas</i>; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.						
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5.13 Safety of the public

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.14 Sanitation

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Undertake environmentally-friendly pest control in the camp area; - Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; - Free condoms must be made available to all staff on site at central points; - Medical support must be made available; - Provide access to Voluntary HIV Testing and Counselling Services. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.16 Emergency procedures

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see <i>Hazardous Substances section 5.17</i>). 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 	Contractor	As defined in EMPr and	Throughout construction	ECO	Monthly	ECO reporting

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and 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); 		method statements submitted	period			
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to <i>Section 5.7</i> for procedures concerning <i>storm and waste water management</i> and <i>5.8</i> for <i>solid and hazardous waste management</i>. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: <i>Storm and waste water management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.19 Batching plants

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <i>Section 5.20: Dust emissions</i>) - Any excess sand, stone and cement must be removed or 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>reused from site on completion of construction period and disposed at a registered disposal facility;</p> <ul style="list-style-type: none"> Temporary fencing must be erected around batching plants in accordance with Section 5.5: <i>Fencing and gate installation</i>. 						
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5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; Where possible, soil stockpiles must be located in sheltered 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>areas where they are not exposed to the erosive effects of the wind;</p> <ul style="list-style-type: none"> - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 *Blasting*

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.22 Noise

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.24 Stockpiling and stockpile areas

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; - Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Rehabilitation of the disturbed areas must be managed in accordance with <i>Section 5.35: Landscaping and rehabilitation</i>; - All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.26 Excavation of foundation, cable trenching and drainage systems



Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with <i>Section 5.18: Workshop, equipment maintenance and storage</i>; and - Hazardous substances spills from equipment must be managed in accordance with <i>Section 5.17: Hazardous substances</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.27 Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Batching of cement to be undertaken in accordance with Section 5.19: <i>Batching plants</i>; and – Residual solid waste must be disposed of in accordance with Section 5.8: <i>Solid waste and hazardous management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Management of dust must be conducted in accordance with Section 5.20: <i>Dust emissions</i>; – Management of equipment used for installation must be conducted in accordance with Section 5.18: <i>Workshop, equipment maintenance and storage</i>; – Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: <i>Hazardous substances</i>; and – Residual solid waste must be recycled or disposed of in accordance with Section 5.8: <i>Solid waste and hazardous management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.29 Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts - Emergency repairs due to breakages of equipment must be managed in accordance with <i>Section 5.18: Workshop, equipment maintenance and storage</i> and <i>Section 5.16: Emergency procedures</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.30 Cabling and Stringing

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

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

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: <i>Solid waste and hazardous Management</i>; - Management of equipment used for installation shall be conducted in accordance with Section 5.18: <i>Workshop, equipment maintenance and storage</i>; - Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: <i>Hazardous substances</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

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
<ul style="list-style-type: none"> - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: <i>Solid waste and hazardous management</i>. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.32 Socio-economic

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

5.33 *Temporary closure of site*

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

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

5.34 *Dismantling of old equipment*

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.

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

5.35 *Landscaping and rehabilitation*

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: <i>Stockpiling and stockpiled areas</i>); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement 	Contractor	As defined in EMPr and method statements submitted	Throughout construction period	ECO	Monthly	ECO reporting

<p>area and from the topsoil must be removed;</p> <ul style="list-style-type: none"> - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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6 ACCESS TO THE GENERIC EMPr

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

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

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

7.1.1 Details of the applicant:

Name of applicant: Hotazel Solar Facility 2 (Pty) Ltd

Tel No: + 27 (21) 418 2596

Fax No: + 27 (0) 86 514 8184

Postal Address: 1st Floor, West Quay Building,7 West Quay Road, Waterfront,Cape Town, 8000

Physical Address: 1st Floor, West Quay Building,7 West Quay Road, Waterfront,Cape Town, 8000

7.1.2 Details and expertise of the EAP:

Name of EAP: Cape EAPrac – Dale Holder

Tel No: 044 8740365

Fax No: 044 874 0432

E-mail address: dale@cape-eaprac.co.za

Expertise of the EAP (Curriculum Vitae included): Ndip Nat Con 16 years experience in environmental management.

7.1.3 Project name: Substation Infrastructure for Hotazel 2.

7.1.4 Description of the project: Substation Infrastructure for Hotazel 2.

7.1.5 Project location:

The Remaining Extent (Portion 0) of the farm York A 279, and associated infrastructure on Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280 situated in the District of Hotazel in the Northern Cape Province.

7.2 Sub-section 2: Development footprint site map

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

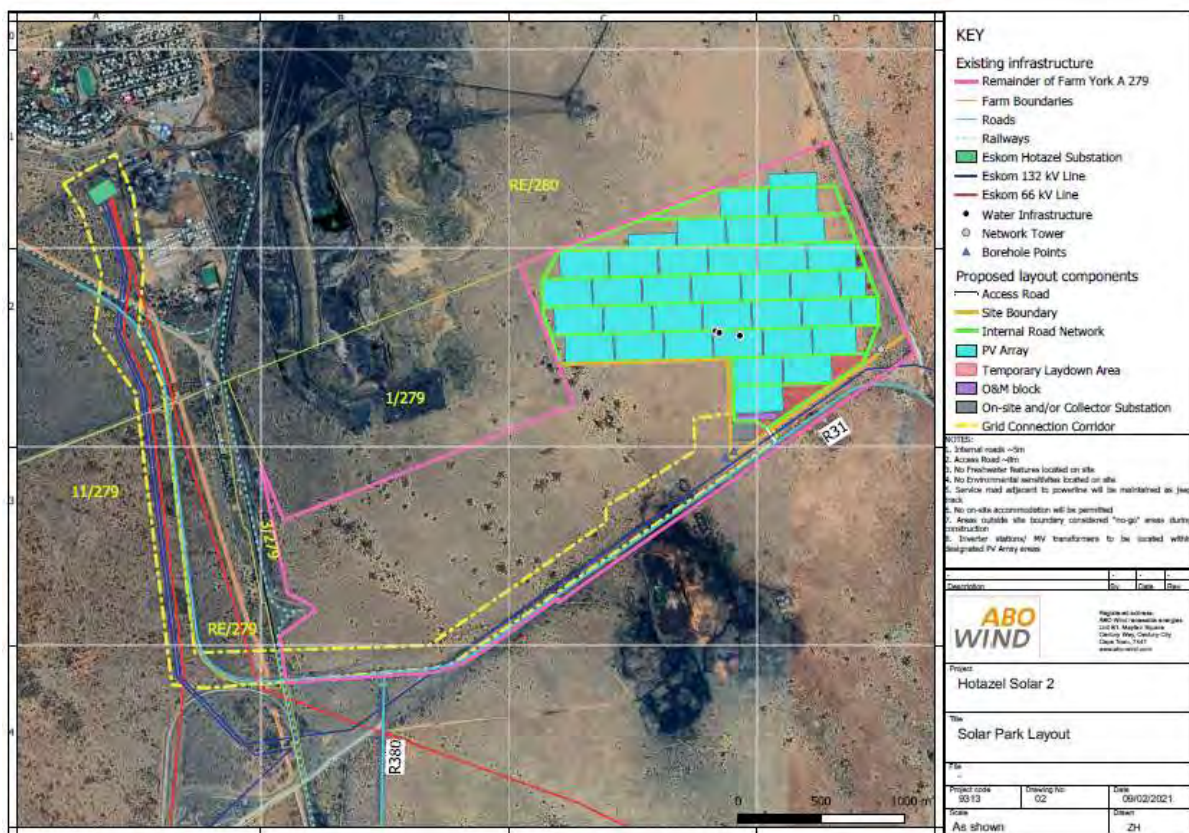


Figure 1: Layout Plan

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the

CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.



Signature Proponent/applicant/ holder of EA

Date: 26 February 2021

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.

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMPr. The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such.

Table 2: Recommended mitigation measures required for the construction, operation and decommissioning of the Hotazel 2 Solar PV development.

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Terrestrial Ecology					
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓	✓	✓	✓	✓
As far as possible, locate infrastructure within areas that have been previously disturbed or in areas with lower sensitivity scores.		✓	✓		
Avoid sensitive features and habitats when locating infrastructure		✓	✓		
No mass clearing of vegetation for the PV arrays should be allowed. Vegetation to be brush cut and only in exceptional circumstances completely cleared.	✓	✓	✓		
Compile a Rehabilitation Plan		✓	✓	✓	✓

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Compile an Alien Plant Management Plan, including monitoring, to ensure minimal impacts on surrounding areas.		✓	✓	✓	✓
Where possible, access roads should be located along existing farm, access and district roads		✓	✓		
Access to sensitive areas outside of development footprint should not be permitted during construction.		✓	✓		
Undertake monitoring to evaluate whether further measures would be required to manage impacts.		✓	✓	✓	
Undertake a biodiversity walkthrough of the site prior to construction.	✓	✓	✓		
A detailed pre-construction walk-through survey will be required during a favourable season to locate any additional individuals of protected plants. This survey must cover the footprint of all approved infrastructure, including internal access roads.	✓	✓	✓		
If possible, plants should be conserved in situ, along with an appropriate buffer zone around them		✓	✓		
Plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect		✓	✓		
A Plant Rescue Plan must be compiled to be approved by the appropriate authorities.		✓	✓		
Restrict impact to development footprint only and limit disturbance spreading into surrounding areas.	✓		✓		
No speeding on access roads – install speed control measures, such as speed humps, if necessary		✓	✓		
No hunting of protected species.		✓	✓		
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species.		✓	✓		
Report any sightings to conservation authorities		✓	✓	✓	
Undertake dust fall-out monitoring and manage, where necessary	✓	✓	✓		
Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. This should include any areas within proximity to the project that may be affected by the project, or that could have an influence on invasion by alien invasive plants into the property		✓	✓	✓	
Undertake regular monitoring to detect alien invasions early so that they can be controlled.		✓	✓	✓	
Avoid development of designated sensitive habitats		✓	✓		
Appropriate lighting should be installed to minimize impacts on nocturnal animals.		✓	✓	✓	
Construction activities should not be undertaken at night.		✓	✓		
Compile and implement a stormwater management plan, which highlights control priorities and areas and provides a programme for long-term control		✓	✓		
Undertake regular monitoring to detect erosion features early so that they can be controlled		✓	✓	✓	
Avoid building on or near steep or unstable slopes.		✓	✓		
No additional clearing of vegetation should take place without a proper assessment of the environmental impacts and authorization from relevant authorities		✓		✓	
Additional infrastructure to be located adjacent to existing infrastructure		✓		✓	
No driving of vehicles off-road		✓		✓	

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
No illegal collecting of any individual fauna or flora		✓	✓	✓	
No hunting of protected species or hunting of any other species without a valid permit.		✓	✓	✓	
Personnel to be educated about protection status of species, including distinguishing features to be able to identify protected species		✓	✓	✓	
Avifaunal					
Activity should as far as possible be restricted to the footprint of the infrastructure.		✓	✓		✓
Measures to control noise and dust should be applied according to current best practice in the industry.		✓	✓		✓
Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.		✓	✓		✓
Access to the rest of the property must be restricted.		✓	✓		
A single perimeter fence should be used .		✓		✓	
With regards to the infrastructure within the substation yard and inverter station, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.		✓		✓	
Palaeontology					
Implementation of a chance find procedure		✓	✓		
Visual					
Investigate the possibility of undertaking screening		✓	✓		
Plan to maintain the height of structures as low as possible;		✓	✓		
Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development		✓	✓		
Reinstate any areas of vegetation that have been disturbed during construction		✓	✓		
Remove all temporary works		✓		✓	
Monitor rehabilitated areas post-construction and implement remedial actions;		✓		✓	
Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.		✓		✓	
Remove infrastructure not required for the post-decommissioning use of the site		✓			✓
All alien plant re-growth must be monitored and should these alien plants reoccur these plants should be re-eradicated. The scale of the development does however not warrant the use of a Landscape Architect and / or Landscape Contractor.		✓	✓		
It is further recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset to ensure a net benefit to the environment within all areas that will remain undisturbed.		✓	✓	✓	
Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off		✓	✓		
Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be included in the EMP to mitigate these impacts.		✓	✓		
Any stormwater within the development area must be handled in a suitable manner, i.e. separate clean and dirty water streams around the plant, and install stilling basins to capture large volumes of run-off, trap sediments and reduce flow velocities (e.g. water used when washing the PV Panels).		✓	✓	✓	
Suitable stormwater management features with erosion control measures (gabions) should also be installed in areas where concentrated flows are		✓	✓		

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
anticipated					
Strict use and management of all hazardous materials used on site.		✓	✓		
Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / banded areas		✓	✓		
Containment of all contaminated water by means of careful run-off management on site.		✓	✓		
Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated water courses or the buffers shown		✓	✓		
Strict control of the behaviour of construction workers.		✓	✓		
Appropriate waste management		✓	✓		
Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced.		✓	✓		
Agriculture					
Installation of proper Erosion control, and drainage on the access road.		✓	✓		
Dust control on the access road during construction.		✓	✓		
The general objective is to position the PV facilities on the lowest potential soil and not in places that may have impact on agricultural activities, drainage lines and places with a sensitive nature. Existing road alignments are followed and roads upgraded for use during the live span of facility. With the appropriate planning, the same live style can be achieved during the lease period of the facility from the land so occupied by the facility.		✓	✓		
Refuelling normally takes place in the workshop of the control building. A designated area for refuelling must be constructed with an impervious floor and low wall that will keep the spillage inside. Any spillage must be cleaned with absorbent material as soon as possible and disposed into clearly marked containers. Where spillage takes place, contaminated soil must be excavated and replaced with unpolluted soil. The contaminated soil should be collected by a licenced landfill contractor.		✓	✓		
Ensure that most infrastructure features are erected on transformed or non-arable land. Implement stormwater management as an integral part of planning and as a guideline for the positioning of structures. Use existing roads and conservation structures to the maximum in the planning and operation phases. Rehabilitate disturbed areas as soon as possible after construction.		✓	✓		
Erosion and sediment control with proper water run-off control planning.		✓	✓		
Appropriate handling and storage of chemicals and hazardous substances and waste should be done.		✓	✓		
When spillage accidentally takes place, it should be removed and replaced with unpolluted soil. The clean soil can be sourced from excavations nearby. The polluted soil must be piled at a temporary storage facility with a firm waterproof base and is protected from inflow of storm water. It must have an effective drainage system to a waterproof spillage collection area. Contaminated soil must be disposed of at a hazardous waste storage facility.		✓	✓		
Clear trees and bushes selectively, leaving grass un-disturbed. Use mechanised machinery when installing posts to eliminate need for foundations. Construct on alternate strips to combat possible erosion.		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Establish structures on the contour. Use grass strips to regulate flow speed		✓	✓		
Social					
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		✓	✓		
Before the construction phase commences the proponent should meet with representatives from the JMLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.		✓	✓		
Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;		✓	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		✓	✓		
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase		✓	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		✓	✓		
The JMLM in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.		✓	✓		
Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;		✓	✓		
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local JMLM Councillor for Ward 2, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers;		✓	✓	✓	
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;		✓	✓	✓	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;		✓	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area;		✓	✓		
The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.		✓	✓		
Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks;		✓	✓		
The contractor must ensure that all construction workers from outside the area		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
are transported back to their place of residence within 2 days for their contract coming to an end;					
It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		✓	✓		
The proponent should implement a policy that no employment will be available at the gate.		✓	✓		
The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;		✓	✓		
The proponent must enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences;		✓	✓		
Traffic and activities should be strictly contained within designated areas		✓	✓		
Strict traffic speed limits must be enforced on the farm		✓	✓		
All farm gates must be closed after passing through		✓	✓		
Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties		✓	✓		
The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below)		✓	✓		
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested		✓	✓		
Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.		✓	✓		
Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation		✓	✓		
The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated;		✓	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;		✓	✓		
Smoking on site should be confined to designated areas;		✓	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle;		✓	✓		
Contractor to provide fire-fighting training to selected construction staff		✓	✓		
Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.		✓	✓		
All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits		✓	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
establishment phase of the construction phase;					
All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase		✓	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed		✓	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO		✓	✓		
Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members; Maximise opportunities for local content, procurement and community shareholding		✓	✓		
The JMLM should liaise with the proponents of other renewable energy projects in the area to investigate how best the Community Trusts can be established and managed so as to promote and support local, socio-economic development in the region as a whole.		✓	✓		
The JMLM should be consulted as to the structure and identification of potential trustees to sit on the Trust. The key departments in the GLM that should be consulted include the Municipal Managers Office, IDP Manager and LED Manager		✓	✓		
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community;		✓	✓		
Strict financial management controls, including annual audits, should be instituted to manage the funds generated for the Community Trust from the SEF plant.		✓	✓		
The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned.		✓	✓		
All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning		✓	✓		
Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.		✓	✓		
Traffic					
Stagger component delivery to site .		✓	✓		✓
Reduce the construction period		✓	✓		✓
The use of mobile batch plants and quarries in close proximity to the site		✓	✓		✓
Staff and general trips should occur outside of peak traffic periods.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓
Dust Suppression of gravel roads during the construction phase, as required.		✓	✓		✓
Regular maintenance of gravel roads by the Contractor during the construction phase and by Client/Facility Manager during operation phase		✓	✓		✓

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.



forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA ·0001· Environment House ·473 Steve Biko Road, Arcadia· PRETORIA

DFFE Reference: 14/12/16/3/3/2/2017

Enquiries: Ms Mathodi Mogorosi

Telephone: (012) 399 9388 **E-mail:** MMogorosi@environment.gov.za

Mr Robert Wagener
Hotazel Solar Facility 2 (Pty) Ltd
Unit B1 Mayfair Square
Century Way
CENTURY CITY
7441

Telephone Number: (021) 276 3620
Email Address: robert.wagener@abo-wind.com

PER MAIL / EMAIL

Dear Mr Wagener

APPLICATION FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, ACT NO. 107 OF 1998, AS AMENDED: FOR THE DEVELOPMENT OF THE UP TO 100MW HOTAZEL 2 SOLAR ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR HOTAZEL IN THE JOE MOROLONG LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE

With reference to the above application, please be advised that the Department has decided to grant authorisation. The Environmental Authorisation (EA) and reasons for the decision are attached herewith.

In terms of Regulation 4(2) of the Environmental Impact Assessment Regulations, 2014, as amended (the EIA Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 14 (fourteen) days of the date of the decision, of the decision, as well as the provisions regarding the submission of appeals that are contained in the Regulations.

In terms of the Promotion of Administrative Justice Act, Act No. 3 of 2000, you are entitled to the right to fair, lawful and reasonable administrative action; and to written reasons for administrative action that affects you negatively. Further your attention is drawn to the provisions of the Protection of Personal Information Act, Act No. 4 of 2013 which stipulate that the Department should conduct itself in a responsible manner when collecting, processing, storing and sharing an individual or another entity's personal information by holding the Department accountable should the Department abuse or compromise your personal information in any way.

Your attention is drawn to Chapter 2 of National Environmental Management Act, Act No. 107 of 1998 National Appeal Regulations published under Government Notice R993 in Government Gazette No. 38303 dated 08 December 2014 (National Appeal Regulations, 2014), which prescribes the appeal procedure to be followed. Kindly include a copy of this document (National Appeal Regulations, 2014) with the letter of notification to interested and affected parties in this matter.

Should any person wish to lodge an appeal against this decision, he/she must submit the appeal to the appeal administrator, and a copy of the appeal to the applicant, any registered interested and affected party, and any organ of state with interest in the matter within 20 days from the date that the notification of the decision was sent to the registered interested and affected parties by the applicant; or the date that the notification of the decision was sent to the applicant by the Department, whichever is applicable.

Appeals must be submitted in writing in the prescribed form to:

The Director: Appeals and Legal Review of this Department at the below mentioned addresses.

By email: appeals@environment.gov.za;

By hand: Environment House
473 Steve Biko
Arcadia
Pretoria
0083; or

By post: Private Bag X447
Pretoria
0001

Please note that in terms of Section 43(7) of the National Environmental Management Act, Act No. 107 of 1998, as amended, the lodging of an appeal will suspend the environmental authorisation or any provision or condition attached thereto. In the instance where an appeal is lodged, you may not commence with the activity until such time that the appeal is finalised.

To obtain the prescribed appeal form and for guidance on the submission of appeals, please visit the Department's website at https://www.environment.gov.za/documents/forms#legal_authorisations or request a copy of the documents at appeals@environment.gov.za.

Yours faithfully



Mr Vusi Skosana
Acting Chief Director: Integrated Environmental Authorisations
Department of Forestry, Fisheries and the Environment

Date: 02 August 2021

cc:	D Holder	Cape Environmental Assessment Practitioners (Pty) Ltd (Cape EAPrac)	Email: dale@cape-eaprac.co.za
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forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Environmental Authorisation

In terms of Regulation 25 of the Environmental Impact Assessment Regulations, 2014, as amended

The development of the up to 100MW Hotazel 2 Solar Energy Facility and associated infrastructure
near Hotazel in the Joe Morolong Local Municipality, Northern Cape Province

John Taolo Gaetsewe District Municipality

Authorisation register number:	<i>14/12/16/3/3/2/2017</i>
Last amended:	<i>First issue</i>
Holder of authorisation:	<i>Hotazel Solar Facility 2 (Pty) Ltd</i>
Location of activity:	<i>Remaining Extent (Portion 0) of Farm York A 279; Portion 11 of Farm York A 279; Remaining Extent of Portion 3 of the Farm York 279; The Remaining Extent (Portion 0) of the Farm Hotazel 280; Joe Morolong Local Municipality; John Taolo Gaetsewe District Municipality; Northern Cape Province.</i>

This authorisation does not negate the holder of the authorisation's responsibility to comply with any other statutory requirements that may be applicable to the undertaking of the activity.

Decision

The Department is satisfied, on the basis of information available to it and subject to compliance with the conditions of this Environmental Authorisation, that the applicant should be authorised to undertake the activities specified below.

Non-compliance with a condition of this Environmental Authorisation may result in criminal prosecution or other actions provided for in the National Environmental Management Act, Act No. 107 of 1998, as amended and the EIA Regulations, 2014, as amended.

Details regarding the basis on which the Department reached this decision are set out in Annexure 1.

Activities authorised

By virtue of the powers conferred on it by the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment Regulations, 2014, as amended, the Department hereby authorises –

HOTAZEL SOLAR FACILITY 2 (PTY) LTD

(hereafter referred to as the **holder of the authorisation**)

with the following contact details –

Mr Robert Wagener

Hotazel Solar Facility 2 (Pty) Ltd

Unit B1 Mayfair Square

Century Way

CENTURY CITY

7441

Telephone number: (021) 276 3620

E-mail address: robert.wagener@abo-wind.com

to undertake the following activities (hereafter referred to as "the activity") indicated in Listing Notice 1 and Listing Notice 2 of the EIA Regulations, 2014 as amended:

Activity number	Activity description
<p><u>Listing Notice 1, Item 11 (i):</u></p> <p><i>"The development of facilities or infrastructure for the transmission and distribution of electricity-</i> <i>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts."</i></p>	<p>Hotazel 2 is located outside an urban area and will connect to the national electricity grid via the Eskom Hotazel Substation. The distribution infrastructure includes the construction of an onsite substation/ collector switching station and a 132kV overhead power line.</p>
<p><u>Listing Notice 1, Item 24 (ii):</u></p> <p><i>"The development of a road -</i> <i>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 meters;"</i></p>	<p>A new road will be constructed along the R31 to access the Hotazel 2 site. The access road will be approximately 100m in length, and will have a width of 8m, but with the inclusion of side drains will exceed a total width of more than 8m.</p>
<p><u>Listing Notice 1, Item 28 (ii):</u></p> <p><i>"Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i> <i>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;"</i></p>	<p>The site is currently utilised for agricultural purposes. The Hotazel 2 facility is considered as a commercial use and will have a total footprint of approximately 230ha.</p>
<p><u>Listing Notice 1, Item 56 (ii):</u></p> <p><i>"The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—</i> <i>(ii) where no reserve exists, where the existing road is wider than 8 metres;"</i></p>	<p>There will be some minor works (i.e. expansion) on the existing R31 in order to accommodate the new access point to the site. The existing roads will be widened by more than 6m where the R31 intersects with the new access point.</p>

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<p><u>Listing Notice 2, Item 1:</u> "The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more."</p>	<p>The Hotazel 2 facility comprises a renewable energy generation facility, which will utilise PV technology, and will have a net generation capacity of up to 100MW.</p>
<p><u>Listing Notice 2, Item 15 (i):</u> "The clearance of an area of 20 hectares or more of indigenous vegetation."</p>	<p>Hotazel 2 will have a maximum footprint of 230ha and as such exceeds the threshold defined in this activity.</p>

as described in the Environmental Impact Assessment Report (EIAR) dated April 2021 at:

Farm Name/s, Portions and SG 21 Codes

Farm name/s, Portions and number/s	SG 21 Code
Remaining Extent (Portion 0) of Farm York A 279	C0410000000027900000
Portion 11 of Farm York A 279;	C0410000000027900011
Remaining Extent of Portion 3 of the Farm York 279; and	C0410000000027900003
The Remaining Extent (Portion 0) of the Farm Hotazel 280	C0410000000028000000

Coordinates for the PV site (most northern and southern bend points):

Hotazel 2 PV Solar Energy Facility (preferred site)	Latitude	Longitude
North-West Corner	27° 12' 36.73" S	22° 59' 0.83" E
North-East Corner	27° 12' 14.59" S	23° 0' 9.84" E
South-West Corner	27° 13' 15.81" S	22° 59' 45.94" E
South-East Corner	27° 12' 52.61" S	23° 0' 25.18" E

Coordinates for the associated infrastructure:

Coordinates of the 132kV powerline Alternative 1 (preferred) (300m corridor)	Latitude	Longitude
Start (On-site substation)	27° 13' 11.69" S	22° 59' 46.00" E
Middle	27° 13' 53.72" S	22° 57' 45.37" E
End (Eskom Hotazel substation)	27° 12' 22.02" S	22° 57' 28.61" E

Coordinates of the on-site substation	Latitude	Latitude
On-site substation and/or a switching substation	27° 13' 10.62" S	22° 59' 48.59" E

- for the development of the up to 100MW commercial photovoltaic (PV) Hotazel 2 solar energy facility (SEF) and associated infrastructure near Hotazel on the Remaining Extent (Portion 0) of Farm York A 279, within the Joe Morolong Local Municipality in Northern Cape Province, hereafter referred to as "the property".

The SEF includes the construction of grid connection infrastructure that will be undertaken on the Remaining Extent (Portion 0) of the farm York A 279, Portion 11 of Farm York A 279, Remaining Extent of Portion 3 of the Farm York 279 and the Remaining Extent (Portion 0) of the Farm Hotazel 280. The 132kV overhead power line will be approximately ±6.7km in length and will connect Hotazel 2 directly to Eskom's Hotazel Substation. The Hotazel 2 on-site substation / collector switching station will be approximately 2ha in size and feature a step-up transformer/s to transmit electricity via the 132 kV overhead power line. The total footprint of Hotazel 2 solar energy facility will not exceed 230ha.

The associated infrastructure will comprise the following:

- On-site substation / collector switching station;
- Auxiliary buildings (gatehouse and security offices, control centre, office, 2 x warehouses, canteen & visitors centre, workshops, staff lockers and ablution facilities);
- Inverter-stations, transformers and internal electrical reticulation (underground cabling);
- Access and internal road network;
- Construction laydown area;
- Rainwater tanks; and
- Perimeter fencing and security infrastructure.

Technical details of the PV Solar Energy Facility:

Component	Description/ Dimensions
Capacity of facility (in MW)	Export Capacity (AC) of up to 100MW
Type of technology	PV (including mono or bifacial) with fixed, single, or double axis tracking technology.
Height of PV Structures	Up to 4m
Surface Area to be covered (including associated infrastructure such as roads)	Up to 230ha

Number of overhead power lines	1
Voltage of overhead power line	Up to 132kV
Height of the power line	Up to 32m
Length of power line	±6.7km overhead powerline from the Hotazel 2 on-site substation/ collector switching station to the Eskom Hotazel Substation.
Capacity of the facility	Up to 100MWac
Area occupied by both permanent and construction laydown areas	Up to 7ha of temporary laydown area. A permanent laydown area of less than 1ha will remain in place for operations
Additional Infrastructure	<p>Auxiliary buildings of approximately 2ha.</p> <p>The functions within these buildings include (but are not limited to) a gate house, ablutions, workshops, storage and warehousing area, site offices, substation, and control centre.</p> <p>Perimeter Fencing not exceeding 5m in height.</p>
Access roads	<p>Access to the site will be via a new access point from the R31</p> <ul style="list-style-type: none"> • Main access road - width: 8m (will exceed 8m with the inclusion of side drains), length: ±100m. • Secondary internal roads – width: 5m, length: ±17 km. <p>There will be some minor works on the existing R31 in order to accommodate the new access point to the site (i.e. expansion / widening by more than 6m, where the R31 intersects with the new access point).</p>

Conditions of this Environmental Authorisation

Scope of authorisation

1. The development of the up to 100MW Hotazel 2 PV Solar Energy Facility with the 300m corridor Grid Connection Alternative 1 and other associated infrastructure near Hotazel within Ward 3 of the Joe Morolong Local Municipality in the Northern Cape Province is approved as per the geographic coordinates cited in the tables above.
2. Authorisation of the activity is subject to the conditions contained in this Environmental Authorisation, which form part of the Environmental Authorisation and are binding on the holder of the authorisation.
3. The holder of the authorisation is responsible for ensuring compliance with the conditions contained in this Environmental Authorisation. This includes any person acting on the holder's behalf, including but not limited to, an agent, servant, contractor, sub-contractor, employee, consultant or person rendering a service to the holder of the authorisation.
4. The activities authorised may only be carried out at the property as described above.
5. Any changes to, or deviations from, the project description set out in this Environmental Authorisation must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further Environmental Authorisation in terms of the regulations.
6. The holder of an Environmental Authorisation must apply for an amendment of the Environmental Authorisation with the Competent Authority for any alienation, transfer or change of ownership rights in the property on which the activity is to take place.
7. This activity must commence within a period of ten (10) years from the date of issue of this Environmental Authorisation. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for Environmental Authorisation must be made in order for the activity to be undertaken.
8. Construction must be completed within five (05) years of the commencement of the activity on site.

Notification of authorisation and right to appeal

9. The holder of the authorisation must notify every registered interested and affected party, in writing and within 14 (fourteen) calendar days of the date of this Environmental Authorisation, of the decision to authorise the activity.
10. The notification referred to must –
 - 10.1. specify the date on which the authorisation was issued;
 - 10.2. inform the interested and affected party of the appeal procedure provided for in the National Appeal Regulations, 2014;
 - 10.3. advise the interested and affected party that a copy of the authorisation will be furnished on request; and
 - 10.4. give the reasons of the Competent Authority for the decision.

Commencement of the activity

11. The authorised activity shall not commence until the period for the submission of appeals has lapsed as per the National Appeal Regulations, 2014, and no appeal has been lodged against the decision. In terms of Section 43(7), an appeal under Section 43 of the National Environmental Management Act, Act No. 107 of 1998, as amended will suspend the Environmental Authorisation or any provision or condition attached thereto. In the instance where an appeal is lodged you may not commence with the activity until such time that the appeal has been finalised.

Management of the activity

12. A final site layout plan for the PV facility and associated infrastructure, as determined by the detailed engineering phase and micro-siting, the botanist walkthrough referred to in condition 37, and all mitigation measures as dictated by the final site layout plan, must be submitted to the Department for written approval prior to commencement of the activity. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g. roads. A copy of the final site layout map must be made available for comments to registered Interested and Affected Parties and the holder of this environmental authorisation must consider such comments. The layout map must indicate the following:
 - 12.1. The position of the solar PV panels;

- 12.2. The on-site substation / collector switching station;
 - 12.3. The final delineation of the centreline of the powerline within the approved 300m corridor;
 - 12.4. The specific position of the pylon structures and foundation footprints;
 - 12.5. Internal roads, the access road, and the widened sections of the R31 to accommodate for the new access point;
 - 12.6. All associated infrastructure;
 - 12.7. All existing infrastructure on the site, especially roads;
 - 12.8. All sensitive features; and
 - 12.9. All "no-go" and buffer areas.
13. The generic Environmental Management Programmes (EMPrs) for the onsite substation and powerline, submitted as part of the EIAR dated April 2021, are approved. The approved final site layout plan indicating the on-site substation / collector switching station and powerline, must be appended to the generic EMPrs.
 14. The EMPr for the PV facility, submitted as part of the EIAR is not approved and must be amended to include measures as dictated by the final site lay-out map and micro-siting, and the provisions of this environmental authorisation. The EMPr must be made available for comments to registered Interested and Affected Parties and the holder of this environmental authorisation must consider such comments. Once amended, the final EMPr must be submitted to the Department for written approval prior to commencement of the activity.
 15. The EMPr amendment must include the following:
 - 15.1. The requirements and conditions of this environmental authorisation;
 - 15.2. All recommendations and mitigation measures recorded in the EIAR and the specialist reports as included in the EIAR dated April 2021;
 - 15.3. A re-vegetation and habitat rehabilitation plan. Restoration must be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats;
 - 15.4. A traffic management plan for the site access road to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimise impacts on local commuters e.g., limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations, including farming operations;

- 15.5. An erosion management plan for monitoring and rehabilitating erosion events associated with the facility. Erosion mitigation must form part of this plan to prevent and reduce the risk of any potential erosion;
- 15.6. A chance-finds procedure, to be implemented in the event of fossils being uncovered;
- 15.7. An effective monitoring system to detect any leakage or spillage of any hazardous substances during their transportation, handling, use or storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems;
- 15.8. A fire management plan; and
- 15.9. The final site layout map.
16. Once approved, the EMPr must be implemented and adhered to. It shall be seen as a dynamic document and shall be included in all contract documentation for the development when approved.
17. Changes to the approved EMPr must be submitted in accordance to the EIA Regulations applicable at the time.
18. The Department reserves the right to amend the approved EMPr should any impacts that were not anticipated or covered in the EIAr be discovered.

Frequency and process of updating the EMPr

19. The EMPr (once approved) must be updated where the findings of the environmental audit reports, contemplated in Condition 26 below, indicate insufficient mitigation of environmental impacts associated with the undertaking of the activity, or insufficient levels of compliance with the environmental authorisation or EMPr.
20. The updated EMPr must contain recommendations to rectify the shortcomings identified in the environmental audit report.
21. The updated EMPr must be submitted to the Department for approval together with the environmental audit report, as per Regulation 34 of the EIA Regulations, 2014 as amended. The updated EMPr must have been subjected to a public participation process, which process has been agreed to by the Department, prior to submission of the updated EMPr to the Department for approval.
22. In assessing whether to grant approval of an EMPr which has been updated as a result of an audit, the Department will consider the processes prescribed in Regulation 35 of the EIA Regulations, 2014 as amended. Prior to approving an amended EMPr, the Department may request such amendments to the EMPr as it deems appropriate to ensure that the EMPr sufficiently provides for avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

23. The holder of the authorisation must apply for an amendment of an EMPr, if such amendment is required before an audit is required. The amendment process is prescribed in Regulation 37 of the EIA Regulations, 2014, as amended. The holder of the authorisation must request comments on the proposed amendments to the impact management outcomes of the EMPr or amendments to the closure objectives of the closure plan from potentially interested and affected parties, including the competent authority, by using any of the methods provided for in the Act for a period of at least 30 days.

Monitoring

24. The holder of the authorisation must appoint an experienced Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this environmental authorisation are implemented and to ensure compliance with the provisions of the approved EMPr.
- 24.1. The ECO must be appointed before commencement of any authorised activities.
- 24.2. Once appointed, the name and contact details of the ECO must be submitted to the *Director: Compliance Monitoring* of the Department.
- 24.3. The ECO must keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.
- 24.4. The ECO must remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.

Recording and reporting to the Department

25. All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this environmental authorisation, must be submitted to the *Director: Compliance Monitoring* of the Department.
26. The holder of the environmental authorisation must, for the period during which the environmental authorisation and EMPr remain valid, ensure that project compliance with the conditions of the environmental authorisation and the EMPr are audited, and that the audit reports are submitted to the *Director: Compliance Monitoring* of the Department.
27. The frequency of auditing for the construction phase and the post-construction monitoring phase must be monthly, and the frequency of submission of these environmental audit reports to the Department must be quarterly, taking into account the processes for such auditing as prescribed in Regulation 34 of the EIA Regulations, 2014 as amended.

28. The holder of the authorisation must, in addition, submit an environmental audit report to the Department within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and a final environmental audit report within 30 days of completion of rehabilitation activities.
29. The environmental audit reports must be compiled in accordance with Appendix 7 of the EIA Regulations, 2014 as amended and must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the environmental authorisation conditions as well as the requirements of the approved EMPr.
30. Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

Notification to authorities

31. A written notification of commencement must be given to the Department no later than fourteen (14) days prior to the commencement of the activity. The notice must include a date on which it is anticipated that the activity will commence, as well as a reference number.

Operation of the activity

32. A written notification of operation must be given to the Department no later than fourteen (14) days prior to the commencement of the activity operational phase.

Site closure and decommissioning

33. Should the activity ever cease or become redundant, the holder of the authorisation must undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and Competent Authority at that time.

Specific conditions

34. No activities will be allowed to encroach into a water resource without a water use authorisation being in place from the Department of Water and Sanitation.
35. Vegetation clearing must be limited to the required footprint for construction works. Mitigation measures must be implemented to reduce the risk of erosion and the invasion of alien species.

36. A permit must be obtained from the relevant Department for the removal or destruction of indigenous, protected, or endangered plant or animal species (if any) and a copy of such permit/s must be submitted to the Department for record keeping.
37. A botanist must be appointed to perform a final walkthrough of the facility to identify areas that require protection, and to identify species of conservation concern that can be translocated and/or require permits. The findings of the final walkthrough must inform the final site layout plan in condition 14 above.
38. No exotic plants may be used for rehabilitation purposes. Only indigenous plants of the area may be utilised.
39. Dust suppression measures must be implemented during the construction phase to limit the impacts of dust.
40. Foundations and trenches must be backfilled with originally excavated materials as much as possible. Excess excavation materials must be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.
41. The washing of panels during maintenance must be done with biodegradable soaps to avoid soil contamination.
42. The powerline must be marked with recommended bird flight diverters (such as brightly coloured 'aviation' balls, thickened wire spirals, or flapping devices) on potential areas of high impact as identified by an avifauna specialist, to increase the visibility of the lines for collision-susceptible species.
43. If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, fossils or other categories of heritage resources are uncovered during construction, work in the immediate area must be halted, SAHRA must be alerted immediately, and a professional archaeologist or palaeontologist (depending on the nature of the finds) must be contacted as soon as possible to inspect the findings.
44. Construction must include design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.
45. An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use, and disposal where appropriate. Any solid waste must be disposed of at a landfill licensed in terms of Section 20 (b) of the National Environment Management Waste Act, 2008 (Act No.59 of 2008).

General

46. A copy of this Environmental Authorisation, the audit and compliance monitoring reports, and the approved EMPr, must be made available for inspection and copying-
- 46.1. at the site of the authorised activity;
 - 46.2. to anyone on request; and
 - 46.3. where the holder of the Environmental Authorisation has a website, on such publicly accessible website.
47. National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the holder of the authorisation or his/her successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the holder of the authorisation with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.

Date of Environmental Authorisation: 08 August 2021



Mr Vusi Skosana

**Acting Chief Director: Integrated Environmental Authorisations
Department of Forestry, Fisheries and the Environment**

Annexure 1: Reasons for Decision

1. Information considered in making the decision

In reaching its decision, the Department took, *inter alia*, the following into consideration -

- a) The listed activities as applied for in the application form received on 14 October 2020.
- b) The information contained in the EIAr dated April 2021.
- c) The comments received from the South African Heritage Resources Agency (SAHRA), South African Radio Astronomy Observatory (SARAO), Department of Agriculture, Land Reform & Rural Development (Northern Cape), Joe Morolong Local Municipality, and interested and affected parties (I&APs) as included in the EIAr dated April 2021.
- d) Mitigation measures as proposed in the EIAr and the EMPr.
- e) The information contained in the specialist studies contained within the appendices of the EIAr dated April 2021 and as appears below:

Title	Prepared by	Date
Fauna and Flora Impact Assessment	3Foxes Biodiversity Solutions	February 2021
Aquatic Impact Assessment	Scherman Colloty & Associates	February 2021
Avifaunal Impact Assessment	3Foxes Biodiversity Solutions	February 2021
Agricultural Impact Assessment	Mr Christo Lubbe	February 2021
Socio-Economic Impact Assessment	Savannah Environmental	February 2021
Archaeological Impact Assessment	Dr Lita Webley	February 2021
Palaeontology Impact Assessment	Dr John Almond	February 2021
Visual Impact Assessment	Visual Resource Management Africa	February 2021
Traffic Impact Assessment	Knight Piésold Consulting	June 2020

2. Key factors considered in making the decision

All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues which, in the Department's view, were of the most significance is set out below.

- a) The findings of all the specialist studies conducted and their recommended mitigation measures.
- b) The need for the proposed project was adequately addressed. The uncertainties involving electricity highlight the need for reforms in an evolving energy sector, where electricity generation, transmission and distribution systems require unbundling. The interest from local municipalities in procuring renewable generation capacity from independent power producers (IPPs) contributes further to the shift in the structure of the country's power sector. Power generation is one of the rare growth opportunities for the Northern Cape due to the high solar irradiation levels and its strategic position relative to the National Transmission Network. This setup creates unprecedented growth opportunities for the area and the establishment of a renewable energy project is considered important to diversify and compliment the economic development of the region.
- c) The EIAr dated April 2021 identified all legislation and guidelines that have been considered in the preparation of the EIAr.
- d) The location of the proposed solar energy facility.
- e) The methodology used in assessing the potential impacts identified in the EIAr dated April 2021 and the specialist studies have been adequately indicated.
- f) A sufficient public participation process was undertaken and the applicant has satisfied the minimum requirements as prescribed in the EIA Regulations, 2014 as amended for public involvement.

3. Findings

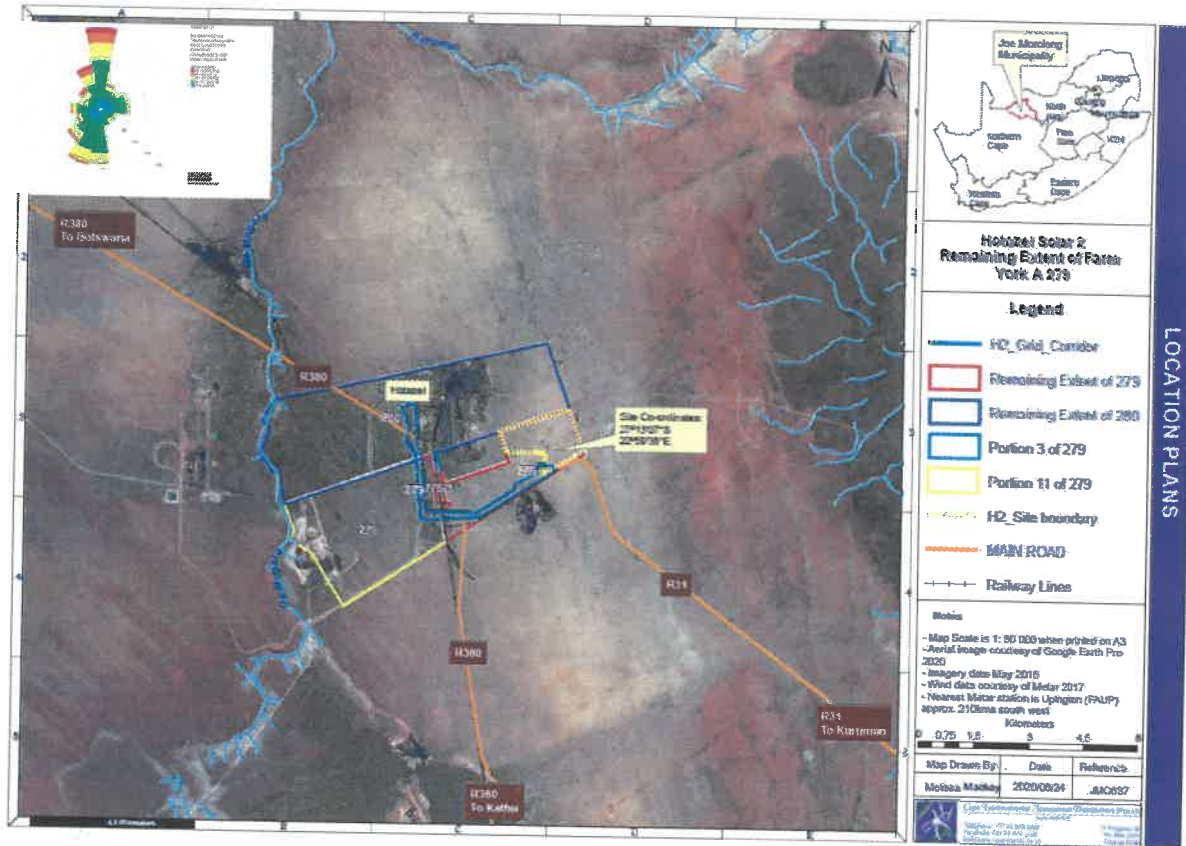
After consideration of the information and factors listed above, the Department made the following findings -

- a) The identification and assessment of impacts are detailed in the EIAr dated April 2021 and sufficient assessment of the key identified issues and impacts have been completed.
- b) The procedure followed for impact assessment is adequate for the decision-making process.
- c) The information contained in the EIAr dated April 2021 is deemed to be accurate and credible.
- d) The proposed mitigation of impacts identified and assessed adequately curtails the identified impacts.

- e) EMPr measures for the pre-construction, construction and rehabilitation phases of the development were proposed and included in the EIAR and will be implemented to manage the identified environmental impacts.

In view of the above, the Department is satisfied that, subject to compliance with the conditions contained in the environmental authorisation, the authorised activities will not conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 and that any potentially detrimental environmental impacts resulting from the authorised activities can be mitigated to acceptable levels. The environmental authorisation is accordingly granted.

Annexure 2: Locality Plan



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forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X 447 · PRETORIA · 0001 · Environment House · Cnr Soutpansberg & Steve Biko Roads · Pretoria Tel (+ 27 12) 399 9000

Enquiries: Devinagie Bendeman Tel: 012 399 9337

Email: Vbendeman@environment.gov.za

Mr. Vusi Skosana
Director: Strategic co-ordination planning and support

Dear Mr. Vusi Skosana

APPOINTMENT AS ACTING CHIEF DIRECTOR: INTEGRATED ENVIRONMENTAL AUTHORISATIONS FOR THE PERIOD 26 JULY 2021 UNTIL 3rd AUGUST 2021.

This serves to confirm your appointment as Acting Chief Director: integrated environmental authorisations, from 26 July 2021 until 3rd August 2021, whilst Mr Sabelo Malaza is on Annual Leave.

You will act in this capacity with the full responsibilities and duties attached to the post, including the activities entrusted to the Acting Chief Director: integrated environmental authorisations by or in terms of the Acts administered by the Department.

Your appointment in the above acting position remains subject to the provisions of the Public Service Act, 1994 (Proclamation No. 103 of 1994), as amended, the Government Employees Pension Fund Act, 1996 (Proclamation No. 21 of 1998), the regulations promulgated under these Acts and relevant circulars.

In the execution of your duties and the exercising of the powers delegated to you, you will furthermore be subjected to the provisions of the Public Finance Management Act, compliance with the promotion of Access to Information Act, Promotion of Administrative Justice Act, the Minimum Information Security Standards, Departmental Policies and other applicable legislations with the Republic of South Africa. You are therefore advised to make yourself familiar with the provisions of the legislations and policies and the amendments thereof. (Copies of departmental policies can be obtained from the Human Resource Office).

Yours Sincerely

Devinagie Bendeman

Acting Deputy Director-General: RCSM (Regulatory Compliance and Sector Monitoring)

Date: 9/07/2021



ACKNOWLEDGEMENT

I ~~DO NOT ACCEPT~~ ACCEPT appointment as Acting Chief Director: integrated environmental authorizations

Signed:

Date: 14 July 2021



Cape EAPrac

Cape Environmental Assessment Practitioners (Pty) Ltd

Reg. No. 2008/004627/07
VAT No 4720248386



Telephone: (044) 874 0365
Facsimile: (044) 874 0432

Web: www.cape-eaprac.co.za

17 Progress Street, George
PO Box 2070, George 6530

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LITHIUM-ION BATTERY ENERGY STORAGE SYSTEM HIGH LEVEL RISK ASSESSMENT FOR THE PROPOSED AMENDMENT OF THE EA FOR THE AUTHORISED HOTAZEL 2 ON FARM YORK A NO 279 WITHIN THE JOE MOROLONG LOCAL MUNICIPALITY NEAR HOTAZEL, NORTHERN CAPE PROVINCE.

This risk assessment is appended to the Addendum to the EMPr developed, specifically to incorporate a Battery Energy Storage System within the authorised footprint of the facility. An environmental application process was initiated to amend the EA for the authorised facility and this risk assessment is submitted as part of this environmental process.

1. PROJECT DESCRIPTION

The Hotazel 2 PV Development received an environmental authorisation for a 100 Megawatt PV Energy facility with associated infrastructure on 02 August 2021.

The current amendment process is for the inclusion of a Battery Energy Storage System on a footprint of up to 5ha within the authorised footprint of the development.

2. MOTIVATION

South Africa has recognised the need to expand electricity generation capacity within the country and to improve reliability and resilience of electrical supply. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA).

The Integrated Resource Plan (IRP 2019) sets the direction for the energy sector, with a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power. One of the main challenges faced by Eskom is managing and balancing electricity demand supply. While renewable resources can now achieve lower costs than fossil fuels, photovoltaic (PV) arrays and wind turbines both have variable electricity production, since they rely on energy inputs that cannot be controlled, particularly at peak consumption periods.

Cost reductions of energy storage technologies and the wider deployment of battery, particularly lithium-ion installations globally, have stimulated interest in combining renewable energy generation with energy storage to provide dispatchable energy (energy on demand) and reliable capacity.

Unlike conventional energy storage facilities such as pumped hydro, battery storage has the advantage of being flexible in terms of site location and sizing. They can be easily incorporated into and in close proximity of a wind or solar facility and can be scaled and designed to meet specific needs.

Different battery storage technologies, such as lithium-ion (Li-ion), zinc hybrid cathode, sodium ion, flow (zinc iron or zinc bromine), sodium sulphur (NaS), zinc air and lead acid batteries can be used for grid applications. Compared to other battery options, Li-ion batteries are highly efficient, have a high energy density and are lightweight. As a result of declining costs, Li-ion technology now accounts for more than 90% of battery storage additions globally (IRENA, 2019).

In line with this practise, the applicant is proposing the use of Lithium Battery Technologies, such as Lithium Iron Phosphate (LFP) or Lithium Nickel Manganese Cobalt oxides (NCM).

The proposed Battery Energy Storage System (BESS) is proposed within the approved footprint, adjacent to the on-site substation. It is proposed that the BESS will have a maximum footprint of 6ha.

This will be achieved by consolidating and altering auxiliary footprint areas identified in the approved EA to accommodate the BESS. The approved footprint will not increase in size, nor will the maximum height of infrastructure. As part of this Amendment Application, the revised layout plans (which include the position of the BESS) will be submitted to the department.

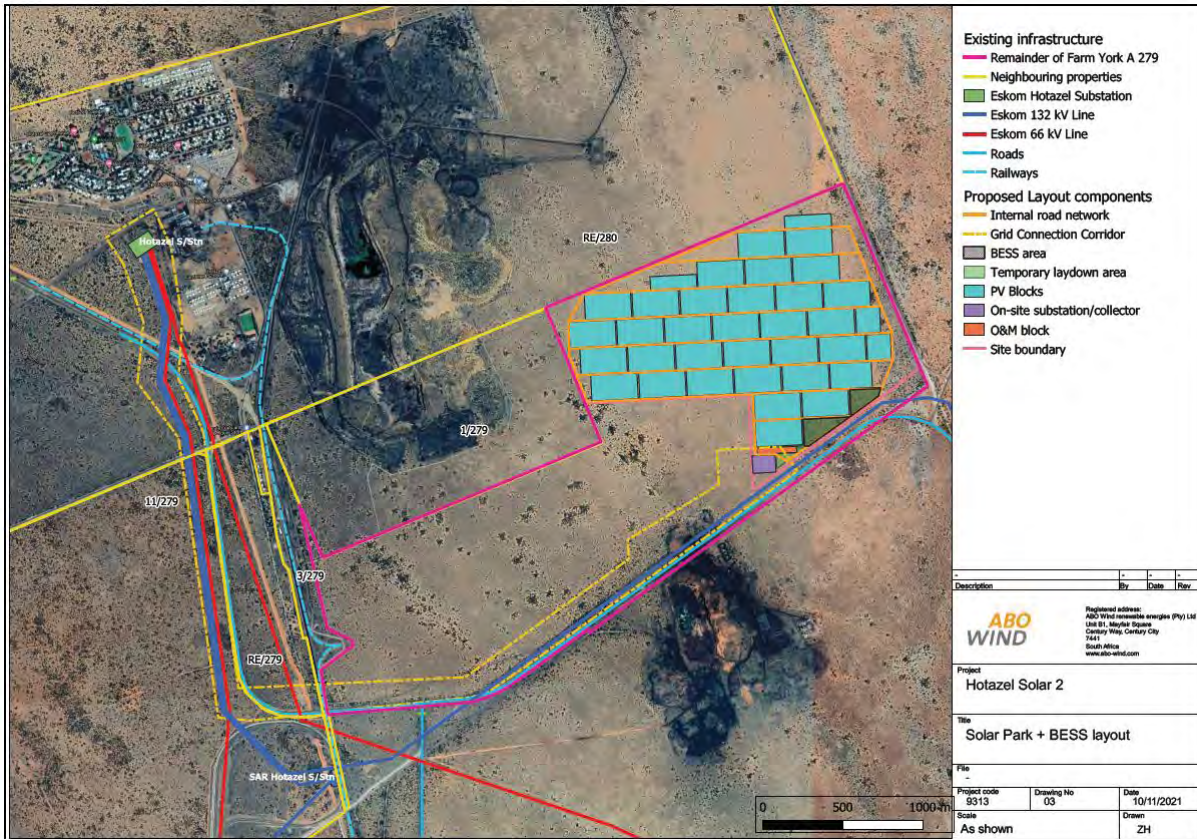
The exact design specifications will depend on the battery manufacturer, however traditional utility scale Li-ion battery storage facility include the following main components:

1. Battery cells → modules → packs → racking system (DC)
2. Storage container (HVAC system, thermal management, monitors and controls, fire suppression, switchgear and energy management system).
3. Power conversion system (bidirectional inverter to convert AC to DC for battery charging and DC to AC for discharging).
4. Transformer to step up 480-V inverter output to 12-66kV.

The inclusion of a BESS into renewable energy facilities is an important step in securing peak demand energy in South Africa. It falls in line with all the relevant policies and programmes that are driving renewable energy development.

3. LAYOUT PLAN SHOWING BESS

The plan below shows the location of the BESS in relation to the authorised footprint of the facility.



As can be seen above, the proposed BESS is situated along the Southern Boundary of the approved footprint, adjacent to the on-site substation (the Bess footprint will also serve as the temporary laydown area during construction). The full-sized layout plans are appended to the Amendment Assessment Report and application for amendment form.

4. RISK ASSESSMENT

The risks associated with lithium-ion (Li-ion) battery technologies are generally well understood and researched. The primary risks relate to fire hazards and the potential for a condition known as ‘thermal runaway’. Thermal runaway occurs in situations where an increase in temperature changes the conditions in a way that causes a further increase in temperature, often leading to a destructive result.

In terms of general environmental risks, these have been identified as the mining for the materials used in batteries and the disposal at end of life. This report does not address any impacts associated with the mining of lithium for the production of Li-ion batteries but is only concerned with the risks associated with onsite use of battery energy storage systems (BESS) for PV facilities.

This probability risk assessment is based on four main principles (questions that need answering):

1. What could go wrong? In other words what are the actual risks (column 1 and 2).
2. What is the likelihood of something going wrong? In other words, how likely is it that the identified risks could occur (column 3).
3. How bad would it be if something went wrong? In other words, what would the actual impact be should one of the identified risks take place (column 4).
4. What additional management actions and/or mitigations need to be in place to reduce the risk and limit the impact of the risk (column 5).

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
BESS component / equipment risks				
Mishandling	Considering that a battery is a source of energy, there is a danger that should it be punctured, incinerated, crushed, immersed, have a forced discharge or exposed to temperatures above the declared operating temperature range of the product, there is a risk that an internal or external short circuit may occur. An internal or external short circuit can cause significant overheating which in some cases could result in fire, that could affect surrounding materials or materials within the cell or battery.	Low	Electrocution. On site fires. Electrical failure. Potential spillage of electrolytes (very low likelihood with lithium batteries).	Training and well managed operations and maintenance. Under normal conditions of use, the electrode materials and electrolyte they contain are not exposed, provided the battery integrity is maintained and seals remain intact. Risk of exposure may occur only in cases of abuse (mechanical, thermal, electrical).
Mechanical Damage	If batteries are not properly stored when not in use prior to installation, there is a possibility that mechanical damage may occur leading to: <ul style="list-style-type: none"> • Leaked battery pack coolant • Leaked refrigerant • Leaked cell electrolyte • Rapid heating of individual cells due to exothermic reaction of constituent materials (cell thermal runaway), venting of cells, and propagation of self-heating and thermal runaway reactions to neighbouring cells. • Fire 	Low	On site fires. Electrical failure. Potential spillage of electrolytes or refrigerant.	Adequate on-site management during the construction and operations and maintenance periods.
Leaked Coolant or Refrigerant	Thermal management of some Li-ion battery packs is achieved via liquid cooling using coolant or refrigerant products. Mechanical damage of a battery pack that has been installed could result in leakage of the coolant. The fluid is generally blue in colour and does not emit a strong odour. This coolant if released has toxicological hazards and ecological effects as well as additional impacts relating to the disposal of leaked fluids. Additionally, extended exposure of the battery system to leaked coolant could cause additional damage to the product such as corrosion and compromising of protection electronics.	Low	Potential spillage of electrolytes. Ecological damage. Electrical failure.	Maintenance. Source from reputable manufacturers. Safe and appropriate storage. Safe handling which must include battery inspection prior to installation.

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
Vented Electrolyte	<p>Li-ion cells are sealed units, and thus under normal usage conditions, venting of electrolyte should not occur. If subjected to abnormal heating or other abuse conditions, electrolyte and electrolyte decomposition products can vaporize and be vented from cells. Accumulation of liquid electrolyte is unlikely in the case of abnormal heating. Vented gases are a common early indicator of a thermal runaway reaction – an abnormal and hazardous condition.</p>	Low	<p>On site fires. Electrical failure. Vent gases.</p>	<p>Maintenance. Source from reputable manufacturers. Safe and appropriate storage. Safe handling which must include battery inspection prior to installation.</p>
Thermal Runaway (TR)	<p>Li-ion battery thermal runaway occurs when a cell, or area within the cell, achieves elevated temperatures due to thermal failure, mechanical failure, internal/external short circuiting and electrochemical abuse. At elevated temperatures, exothermic decomposition of the cell materials begins. Eventually, the self-heating rate of the cell is greater than the rate at which heat can be dissipated to the surroundings, the cell temperature rises exponentially, and stability is ultimately lost. The loss in stability results in all remaining thermal and electrochemical energy being released to the surroundings.</p> <p>It's widely accepted that most TRs are caused by mechanical, electrical or thermal abuses.</p>	Low	<p>On site fires. Electrical failure. Potential spillage of electrolytes.</p>	<p>Maintenance. Despite various factors that may lead to TR, materials including electrode materials as well as electrolytes, and battery design such as negative/positive capacity ratio and venting control, to name but a few, are the intrinsic approaches to enhance the battery safety. Source from reputable manufacturers. Safe and appropriate storage. Safe handling which must include battery inspection prior to installation. Development and implementation of Thermal Management Plan.</p>
Limited knowledge and experience of First Responders to deal with emergency incidents.	<p>As this technology is relatively new in a South African context, the first responders in an unlikely event of an incident may not have the necessary knowledge or experience to deal with an emergency situation such as fire or leakage.</p>	Low	<p>Fire. Electrocution. Injury. Inability to contain spillage.</p>	<p>During the construction phase of the project, first responders from the nearest major centre (such as fire fighters and paramedics) must be given appropriate training on dealing with any emergency situation that may occur as a result of the BESS. Such training must be provided by the technology suppliers or an appointed service provider.</p>

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
				Appropriate warnings and Standard Operating Procedure for emergency events must be developed and must be provided to the local emergency services and the O&M staff on site.
Disposal at end of life	<p>Disposal of Li-ion batteries to landfill is problematic and recycling should be prioritised. Research in Australia found that just 2% of the country's 3,300 tonnes of Li-ion waste is recycled. South Africa fares far worse (as of November 2019, there was no Li-ion battery recycling facility in South Africa (eWASA)) and Li-ion batteries along with significant amounts of e-waste are not properly disposed of or sent for recycling. In addition to the lithium, manufacturers are secretive about what actually goes into their batteries, which makes it harder to recycle them properly. And while lithium itself isn't of great concern from a pollution angle, these batteries do contain metals like cobalt, nickel, and manganese.</p> <p>The potentially toxic materials contained in batteries means that they are classified as hazardous materials in terms of NEM:WA. There are only a few licensed hazardous waste sites in South Africa and recycling of batteries and e-waste has been identified as a sure way of improving the lifespans of such sites.</p>	High	<p>Potential scenario of fluids from the batteries leaking into environment.</p> <p>The release of such chemicals through leaching, spills or air emissions can harm communities, ecosystems and food production.</p>	<p>Recovery of metals at end of life can significantly reduce these life cycle impacts. This is because the extraction and processing of virgin materials are key contributors to impacts for all battery chemistries.</p> <p>Prior to commencement of the activity, a dedicated Battery Recycling Programme must be compiled and adopted.</p>
General Environmental Risks				
Hydrocarbon Spillage	The BESS area will contain transformers which contain oil for cooling (unless air-cooled). Temporary fuel storage will take place during the construction phase.	Low	Contamination of land and adjacent water resources.	Implementation of the Management actions already included in the EMPr.
Physical damage to surrounding natural areas	Construction activities if not properly managed could impact on areas outside of the construction footprint.	Medium	Physical damage to habitat.	Implementation of the Management actions already included in the EMPr particularly in

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
				relation to the demarcation of no-go areas.
Impact on species of conservation concern	The transformation of habitat associated with the BESS, may have a direct impact on species of conservation concern.	Medium	Loss of individual plants within the footprint of the BESS.	Implementation of the Management actions already included in the EMPr. Compliance with the conditions of the Threatened or protected species (TOPS) permits. Undertaking plant rescue in compliance with the plant rescue and protection plan.
Concrete contamination	Run off from concrete civil works could contaminate surrounding areas.	Low	Contamination of land and surrounding water resources.	Implementation of the Management actions already included in the EMPr. Use of ready-mix concrete and the limitation of on-site batching.
Dust	Dust fall out from construction activities.	Medium	Health and safety impacts. Impacts on surrounding vegetation.	Implementation of the Management actions already included in the EMPr. Implementation of a dust fall out monitoring programme.
Protection of Archaeological Resources	Subterranean resources could be exposed during excavations.	Low	Loss of archaeological resources.	Implementation of the Management actions already included in the EMPr. ECO Inspection of all excavations. Compliance with requirements of SAHRA authorisation.
Loss of topsoil resources	All construction activities will have the possibility to impact on topsoil resources.	Low	Loss of Topsoil Contamination of Topsoil.	Implementation of the Management actions already included in the EMPr particularly with regard to topsoil handling and the stripping and stockpiling of topsoil from the BESS footprint prior to construction.

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
Noise Impact	Although the proposed development is located outside of an urban area, construction noise could have an impact on sensitive receptors.	Low	Impact on health and safety of construction staff. Impact on displacement of fauna.	Implementation of the Management actions already included in the EMPr and compliance with the relevant legislation with respect to noise inter alia Section 25 of ECA (73 of 1989) and standards applicable to noise nuisances in the Occupational Health and Safety Act (No. 85 of 1993).
Siltation and erosion	Stormwater and wash water have the potential to cause erosion or pollution of the receiving environment.	Low	Contamination of surrounding land. Impact on water Quality.	Implementation of the Management actions already included in the EMPr. Implementation of the Stormwater Management Plan.
Theft and other crime.	An increase in crime during the construction phase is often a concern during the development of the overall facility, including the BESS. This is likely to be negligible due to the extremely remote nature of the site.	Low	On site theft. Theft at surrounding properties.	Implementation of the Management actions already included in the EMPr. Implementation of a site security plan.
Wildfires	The solar development site including the BESS is arid, with sparse vegetation cover and fires are not a natural phenomenon in the area. However, under exceptional circumstances, such as following years of very high rainfall, sufficient biomass may build up to carry fires.	Low	Damage to infrastructure.	Implementation of the Management actions already included in the EMPr. Maintaining a firebreak around the total project footprint in the form of a perimeter road.

5. CONCLUSION

A comprehensive operations and maintenance programme is necessary to ensure that all management and mitigation measures listed above and included in the revised EMPr are adopted and implemented as well as to ensure that all monitoring and protective devices are in good working order.

Regular inspections should be undertaken to ensure the battery systems are not overheating or showing signs of malfunction. Annual thermographic scanning can help ensure the BESS is operating within normal parameters.

This high-level risk assessment must be replaced with a detailed technology specific risk assessment once the final equipment suppliers have been identified during the detailed design and procurement stage.