

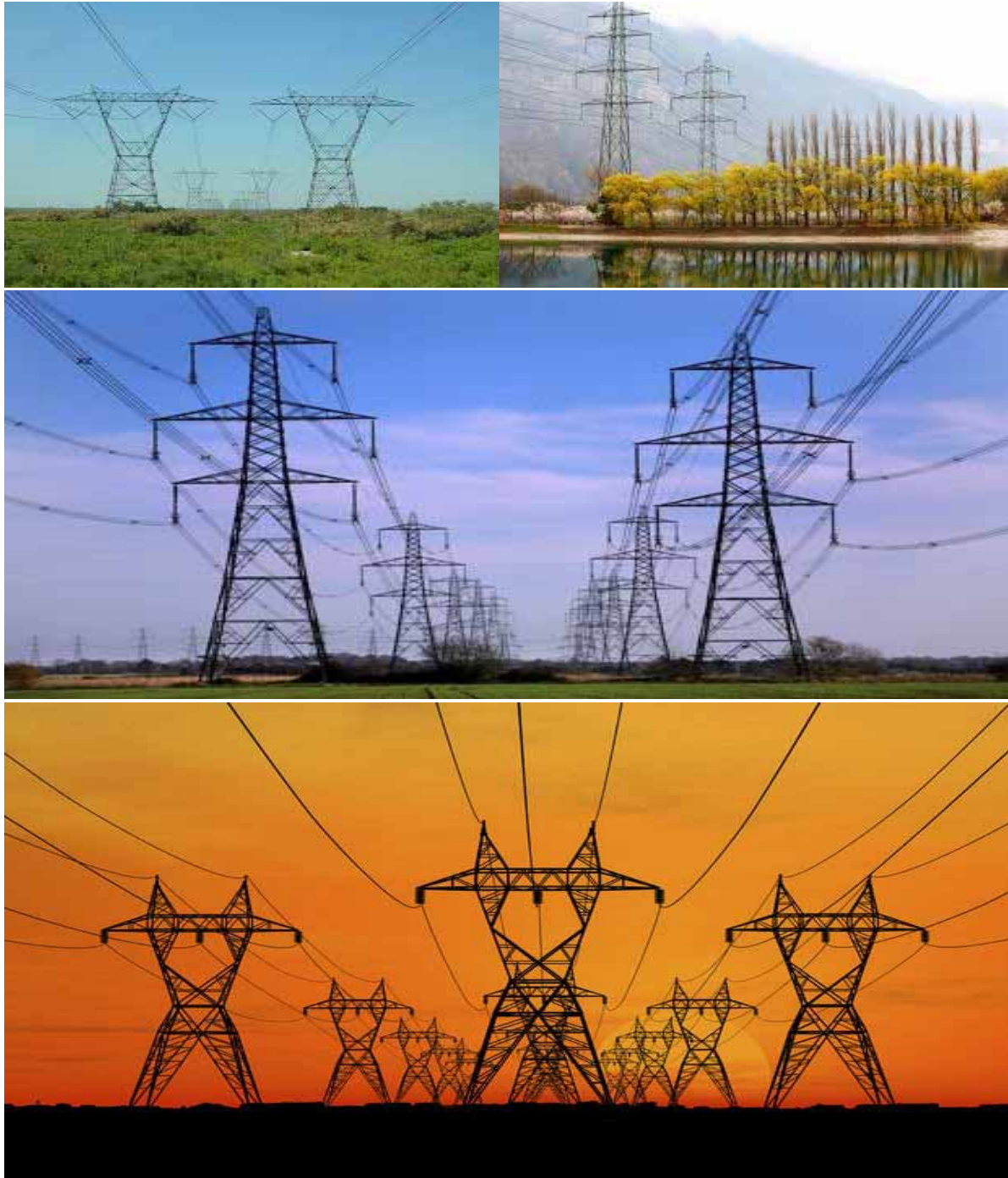
APPENDIX 5: GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) – Development of Overhead Electrical Infrastructure for the transmission and distribution of electricity

Government Notice 435 gazetted on 22 March 2019 (GN435/2019) specifies that any application that includes development of overhead electricity transmission and distribution infrastructure requiring EA in terms of NEMA with a capacity of 33 kilovolts or more must use the generic Environmental Management Programme included in GN435/2019.

This EMPr consists of the following:

1. **Generic Environmental management Programme (EMPr) for the development and expansion of overhead electrical line infrastructure for the transmission and distribution of electricity via the planned 400 kV Gamma Gridline:**
 - a. **Introduction**
 - b. **Part A- General Information**
 - c. **Part B: Section 1: Pre-approved generic EMPr template**
 - d. **Part B: Section 2: Site specific Information and declaration**
 - e. **Part C: Site specific environmental attributes**

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



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

1. Background

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

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of 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 template contained in <u>Part B: Section 1</u>, and understands that the impact management

Part	Section	Heading	Content
			<p>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> <p>This section applies only to additional impact management outcomes and impact</p>

Part	Section	Heading	Content
			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 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 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> 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>

Responsible Person (s)	Role and Responsibilities
	<p>The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the 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>

Responsible Person (s)	Role and Responsibilities
	<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; - 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.

Responsible Person (s)	Role and Responsibilities
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u> The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</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;
<p>Contractor</p>	<p><u>Role</u> 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.
<p>contractor Environmental Officer (cEO)</p>	<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;

Responsible Person (s)	Role and Responsibilities
	<ul style="list-style-type: none"> - 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 						

<p>potential, related to their work activities;</p>															
<ul style="list-style-type: none"> b) Mitigation measures to be implemented when carrying out specific activities; 															
<ul style="list-style-type: none"> c) Emergency preparedness and response procedures; 															
<ul style="list-style-type: none"> d) Emergency procedures; 															
<ul style="list-style-type: none"> e) Procedures to be followed when working near or within sensitive areas; 			<ul style="list-style-type: none"> f) Wastewater management procedures; 												
<ul style="list-style-type: none"> g) Water usage and conservation; 															
<ul style="list-style-type: none"> h) Solid waste management procedures; 															
<ul style="list-style-type: none"> i) Sanitation procedures; 															
<ul style="list-style-type: none"> j) Fire prevention; and 															
<ul style="list-style-type: none"> k) Disease prevention. 															
<ul style="list-style-type: none"> - A record of all environmental awareness training courses undertaken as part of the EMPr must be available; 															
<ul style="list-style-type: none"> - Educate workers on the dangers of open and/or unattended fires; 															
<ul style="list-style-type: none"> - A staff attendance register of all staff to have received environmental awareness training must be available. 															
<ul style="list-style-type: none"> - Course material must be available and presented in appropriate languages that all staff can understand. 															

5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						

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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. 						

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; - 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 section 4.9: photographic record: prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on pre-planned and approved roads. 						

5.5 Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission 						

<p>and distribution electricity infrastructure development activities;</p> <ul style="list-style-type: none"> - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where appropriate and would not cause harm to the sensitive flora; - 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 or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. - Ensure water conservation is being practiced by: <ul style="list-style-type: none"> a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged. 						
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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; 						

<ul style="list-style-type: none"> - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 						
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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; 						

<ul style="list-style-type: none"> - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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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; 						

<ul style="list-style-type: none"> - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <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; 						

<ul style="list-style-type: none"> - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas. <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; 						
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<ul style="list-style-type: none"> - 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 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; 						

<ul style="list-style-type: none"> - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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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 Section 5.3: Access restricted areas; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that 						

a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.						
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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. 						

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 ablation facilities are available; - The use of ablation 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; 						

<p>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.</p>						
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5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Undertake environmentally-friendly pest control in the camp area; – Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV/AIDS; – The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; – Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; – Free condoms must be made available to all staff on site at central points; – Medical support must be made available; – Provide access to Voluntary HIV Testing and Counselling Services. 						

5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17). 						

5.17 Hazardous substances

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

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

<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowzers; - The tanks/ bowzers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowzers (110% statutory requirement plus an allowance for rainfall); 					
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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 banded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management. 					
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: storm and waste water management. 						

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; 						

<ul style="list-style-type: none"> – Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.

Impact Management Actions	Implementation				Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
<ul style="list-style-type: none"> – Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; – Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; – Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; – During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; – Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; 							

<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. 						

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. 						

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. 						

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. 						
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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 person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of 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; 						

<ul style="list-style-type: none"> - 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. 						
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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 Section 5.18: Workshop equipment maintenance and storage; and - Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. - Batching of cement to be undertaken in accordance with Section 5.19 : Batching plants; - Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management. 						

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 of environmental impact; - 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; 						

<ul style="list-style-type: none"> - 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 accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation; - 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; - 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". <p>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;</p> <ul style="list-style-type: none"> - Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter; 						

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

<ul style="list-style-type: none"> - 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. 						
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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		
	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: management of hazardous substances and 5.18 workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; 						

<ul style="list-style-type: none"> - 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. 						
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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 Section **5.24: Stockpiling and stockpiled areas**);
- Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;
- Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;
- Subsoil must be ripped before topsoil is placed;
- The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;
- Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ;
- Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments.

<p>The contract design specifications must be adhered to and implemented strictly;</p> <ul style="list-style-type: none"> - 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: Red Cap Hoogland 1 (Pty) Ltd

Tel No: 021 790 1392

Cell No: 083 235 6737

Fax No: N/A (email lance@red-cap.co.za)

Postal Address: Red Cap, Unit B2, Mainstream Shopping Centre, Main Road, Hout Bay, Cape Town, 7806

Physical Address: Red Cap, Unit B2, Mainstream Shopping Centre, Main Road, Hout Bay, Cape Town

7.1.2 Details and expertise of the EAP:

Name of EAP: Dr Belinda Clark of CEN Integrated Environmental Management Unit

Tel No: 041 367 4748 / 072 725 6400

Fax No: - 086 504 2549

E-mail address: bclark@telkomsa.net; steenbok@aerosat.co.za

Expertise of the EAP (Curriculum Vitae included): PhD Botany, Registered Environmental Assessment Practitioner (No. 2019/1336).

7.1.3 Project name: Gamma 400 kV Gridline

7.1.4 Description of the project:

Red Cap Hoogland 1 (Pty) Ltd (Red Cap) proposes a new 400 kV grid connection from the authorised Nuweveld Wind Farm Development Collector Substation to the 132/400 kV Gamma Substation (the 'project'). The project is intended to expand the capacity of the Eskom grid and improve grid functionality in the area. Gridline access tracks for construction and maintenance purposes, and temporary laydown areas for construction also form components of the project.

The following infrastructure form components of the project:

- Overhead lines and pylons developed within a ~55 m servitude:
 - A ~110 km long, 400 kV overhead line and supporting lattice-type pylons - different lattice-type pylons will be used along the gridline, depending on topography and span characteristics. The majority will be cross-suspension towers 27 to 42 m in

height, but self-supporting towers will be used at turn points, at steep slopes or where a very large distance needs to be spanned. An exception to this is in an area up to 2 km west of, and 500 m east of the N12 where pylons of up to 50 m in height will be required to span and avoid a sensitive habitat.

- The footprint of each pylon will be less than 100 m².
- Access roads and tracks:
 - Existing access roads and tracks (upgraded to 4.5 m wide where needed) will be used as far as possible. New access tracks may be required, and will also be up to 4.5 m wide, and aligned outside of 'no-go' areas identified by specialists.
 - The estimated footprint for new access tracks is 46 ha (i.e. 115 km x 4m = 46 ha). This is a worst-case scenario footprint following a conservative approach where it is assumed that 4 m side access tracks are required for the entire length of the line including an additional 5 km allowance for deviations from the gridline route (where in reality, existing roads and tracks will be used for large portions of the route and the length of new access tracks is likely to be considerably less than the entire length of the line).
- Temporary laydown areas will be identified along the gridline alignment, with the main equipment and construction yards being located in one of the surrounding towns. The total area needed for temporary laydown areas is estimated to be 5 ha

This Generic EMPr has been prepared specifically for the planned new 400 kV line between the Nuweveld Wind Farm development Collector Substation and the Gamma Substation.

On completion of construction, the infrastructure and permanent roads will be handed over to Eskom and form part of the National Grid.

7.1.5 Project location:

The refined Corridor for the Gamma Gridline is 3 km wide and ~110 km long, running from the Nuweveld Collector Substation in the west to the Gamma Substation in the east (see Figure 1). The authorised Nuweveld Collector Substation is situated ~56 km north of Beaufort West in the Western Cape Province and is part of the authorised Nuweveld WEF. The operational Gamma Substation is located ~90 km to the east of the Nuweveld Collector Substation, ~27 km south-east of Hutchinson. Although the Corridor and gridline start in the Western Cape (Central Karoo District Municipality and Beaufort West Local Municipality), portions of the line would traverse land in the Northern Cape (Pixley ka Seme District Municipality and Ubuntu Local Municipality).

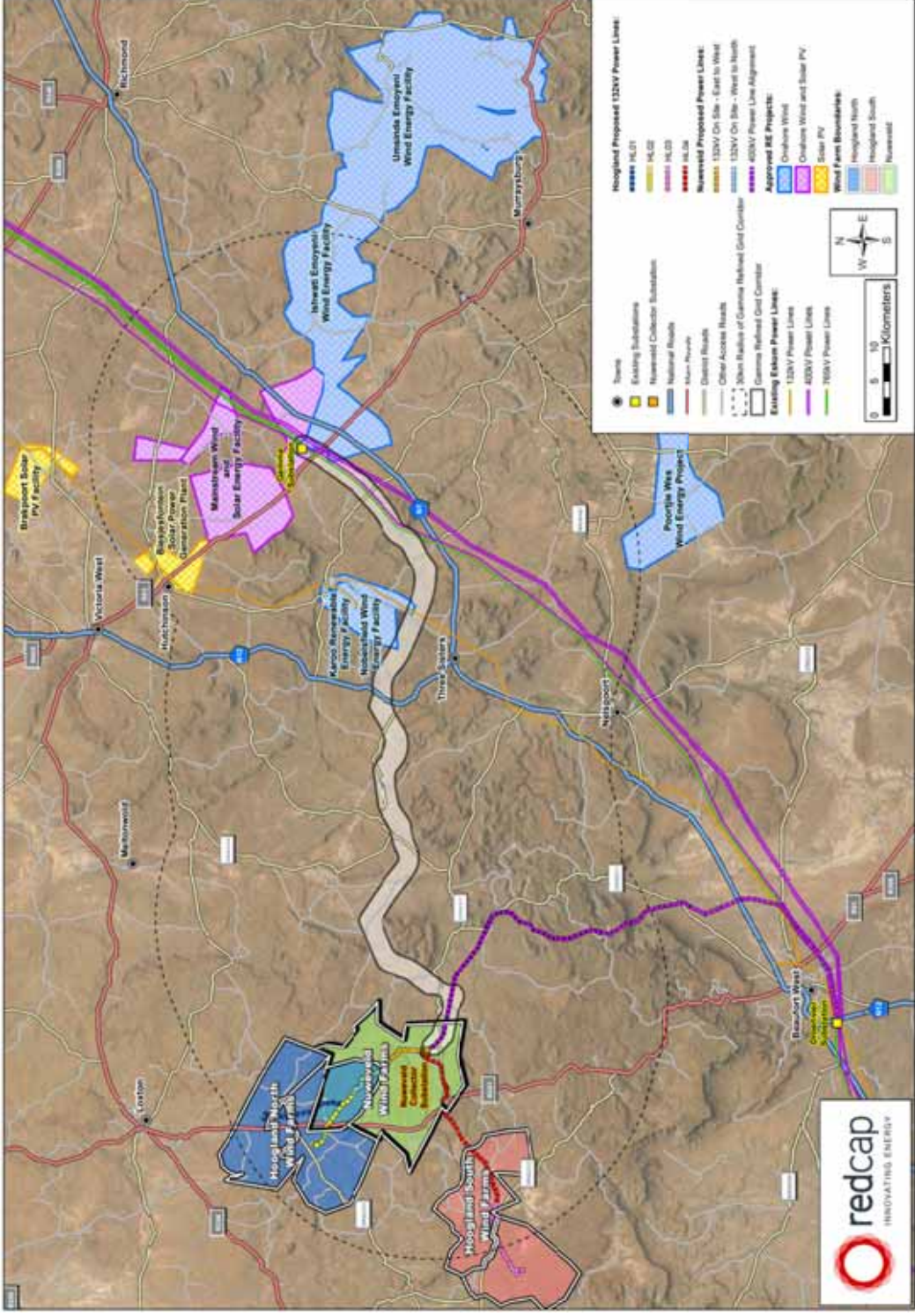


Figure 1: Regional overview of the refined Gamma Corridor and existing and/or approved Renewable Energy (RE) projects within a 30 km radius of the Assessment Corridor.

Details of the properties falling within the refined Gamma Grid Corridor are presented in Table 1.

Table 1: Property Details – Gamma Grid Corridor

SG Code	Farm Name	Farm Number
C009000000000460000	SNEEUW KRAAL	46
C009000000000470000	SNEEUW KRAAL	47
C009000000000450000	DUIKER KRANSE	RE/45
C009000000000450003	DUIKER KRANSE	RE/3/45
C080000000002070004	VLAK FONTEIN	4/207
C080000000002070001	VLAK FONTEIN	1/207
C080000000002350000	EZELSFONTEIN	RE/235
C080000000002350000	EZELSFONTEIN	RE/235
C080000000002380000	GROOTKLIP	RE/238
C080000000002390000	RIETKLOOF PLAATEN	RE/239
C080000000002380000	GROOTKLIP	RE/238
C080000000002370000	WATERVAL	RE/237
C052000000001760000	MURRAYSBURG RD	RE/176
C052000000001500000	TAAYBOSCHFONTEIN	RE/15
C080000000002650000	UIT VLUGT FONTEIN	265
C052000000000300001	SCHIETKUIL	1/3
C080000000002240000	DOORN KLOOF	RE/224
C0090000000001100000	AANGRESEND ABRAMS KRAAL	11
C052000000000100000	PHAISANT KRAAL	1
C080000000002260000	KOOK FONTEIN	RE/226
C0630000000009300000	KLEINFONTEIN	RE/93
C052000000000300000	SCHIETKUIL	3
C052000000001500001	TAAYBOSCHFONTEIN	RE/1/15
C080000000002400000	ZWARTKOPJES	RE/240
C0800000000022800001	MODDERFONTEIN	1/228
C0520000000001400011	MORDANT KLAASSENSKRAAL	RE/11/14
C0800000000026500001	UIT VLUGT FONTEIN	1/265
C0800000000020800001	DRUPFONTEIN	1/208
C0800000000022500003	BRAKFONTEIN	3/225
C0090000000004900002	PAARDEBERG	2/49
C0090000000005900001	AASVOGELBERG	1/59
C0800000000020600000	ABRAMS KRAAL	RE/206
C0800000000020800002	DRUPFONTEIN	2/208
C0800000000020700003	VLAK FONTEIN	3/207
C052000000000200000	GABRIELS BAKEN	2
C0090000000004500004	DUIKER KRANSE	4/45
C0800000000022500001	BRAKFONTEIN	1/225
C0800000000022500001	BRAKFONTEIN	1/225
C0800000000023500002	EZELSFONTEIN	2/235
C0800000000023500003	EZELSFONTEIN	3/235
C0800000000023500004	EZELSFONTEIN	4/235
C0800000000023900001	RIETKLOOF PLAATEN	1/239
C0800000000023400000	ANNEX NOBELS FONTEIN	RE/234
C0800000000023500005	EZELSFONTEIN	5/235
C0800000000023500001	EZELSFONTEIN	1/235
C0800000000023800001	GROOTKLIP	1/238
C0800000000022500000	BRAKFONTEIN	RE/225

C00900000000005900004	AASVOGELBERG	4/59
C00900000000005900002	AASVOGELBERG	2/59
C08000000000022800003	MODDERFONTEIN	3/228
C08000000000022800004	MODDERFONTEIN	4/228
C08000000000024000001	ZWARTKOPJES	1/240
C08000000000024000002	ZWARTKOPJES	2/240

Gamma Gridline Corridor Co-ordinates	
Location	Co-ordinates
Start (west) - Nuweveld Wind Farm Development Collector Substation	31°51'21.18"S, 22°28'37.98"E
Middle	31°48'25.48"S 22°58'26.82"E
End (east) – Gamma Substation	31°40'43.63"S 23°24'29.63"E

7.16 Preliminary technical specification of the overhead transmission and distribution:

Powerline capacity	400 kV
Corridor Length	~110 km
Corridor Width	~3 km
Height of Powerline	~ Up to 50 m
Pylon types	Lattice type pylons. Different pylon types will be used at different areas depending on the topography and span characteristics. Majority of the pylons to be used along the Gamma gridline are likely to be the Cross-Rope Suspension Tower type. Self-supporting towers will only be used at turn points in the alignment.
Pylon foundation and footprint	Pylon foundation - to be determined at detailed design stage. The footprint of each pylon is estimated to be 100 m ²
Servitude Width for Powerline	55 m

EAP Curriculum Vitae: Belinda Clark

Curriculum Vitae: Belinda Joan Clark

Personal Details:

ID Number: 7507170038084

Address: 43 Rhodes Street, Mount Pleasant, Port Elizabeth

Contact number: 072 725 6400

Email: bclark@telkomsa.net

Qualifications

- B.Sc (Botany, Geology)
- B. Sc Honours (Botany: terrestrial ecology, environmental management, agriculture)
- M.Sc (Botany: Marine Eco-physiology)
- PhD (Botany: Marine Ecology, focusing on marine pollution)

Training and Workshops:

- Light Sport Aircraft Licence: May 2018
- Private Pilot's Licence: 2020
- Eastern Cape Tour Guide Course: January 2010
- Introduction to Wildflower Identification: January 2010
- National Biodiversity Planning Forum (2018)
- National Biodiversity Planning Forum (2009)
- National Biodiversity Planning Forum (2008)
- Identification workshop on the *Ericaceae* family
- Advanced International Training in Urban Environment Management (2010 - 2011) – Sweden and Zambia
- EIA Regulations (2010, 2011, 2014) Workshops – various
- Climate Change Workshop (2011)

- Workshop: Integrated Coastal Management Act (Kenton, 2011). Imbewu
- Workshop: Introduction to the implementation of environmental law (Kenton, October, 2012). Imbewu
- Workshop: Contaminated Land Register (Port Elizabeth, February 2013). Imbewu
- Veld Management and Grass Identification course (Pretoria, February 2013). Africa Land Use Training
- Water Law Workshop (Port Elizabeth, August 2013). Imbewu
- Wetland Indaba (Cape St Francis, October 2013)
- Thicket Forum (various – 2009 to current)
- Water Use Licence Training – Section 21 c and i water use activities (August 2016)
- Estuary Management Course (December 2016)

Seminars/Presentations delivered:

- Nelson Mandela University – 2019: Environmental Management in South Africa. Presentation to Masters Development Studies Students in
- Geography Teachers Conference – 2019: Environmental management issues in the lower Baakens River Valley
- Thicket Forum – 2018: Ecosystem Guidelines for the Albany Thicket Biome
- Biodiversity Planning Forum – 2018: Ecosystem Guidelines for the Albany Thicket and Savanna Biomes
- IMESA Conference – 2018: Environmental management issues in the lower Baakens River Valley
- Nelson Mandela University – 2017: EIA process and regulations presentation to Development Studies students
- Masifunde – 2017: Presentation on Climate Change
- Nelson Mandela Bay Climate Change Conference – 2011: the role of academic institutions (specifically the NMMU Botany Department) in climate change planning
- Geography Conference – 2011: Environmental Impact Management in South Africa
- Thicket Forum – August 2008: Case study: Towards implementing environmental planning guidelines (STEP, MOSS, ECBCP) in EIAs

- Phycological Society of Southern Africa (PSSA) - January 1999: The effect of water-solute oil extracts and metals on oxygen evolution rates by *Anaulus australis*.
- PSSA – July 2000: The effect of excess concentrations of nitrate, ammonium, and phosphate on cell division cycles of *Anaulus australis*.
- PSSA – January 2002: Microalgae as indicators of pollution in surf-zones in Algoa and St Francis Bay
- PSSA – January 2003: Increases in surf-zone nutrient concentrations as a result of increased septic tank outflow after an Easter weekend
- PSSA – January 2004: Surf-zone water quality and the associated microalgal species composition
- SAAB – January 2002: Microalgae as indicators of pollution on the south coast of South Africa
- South African Marine Science Symposium (SAMSS) – January 2005 – Factors determining the dominance of dinoflagellate cells versus *Anaulus australis*.
- UPE Departmental Seminars - Hydroponics (1997), Aspects of ecophysiology of *A. australis* (1998), Microalgae as indicators of pollution (project proposal) (2000), Microalgae as indicators of pollution (2001)

Career Biography

- Nelson Mandela Metropolitan University (North Campus) (January 2004 – December 2006)
 - Responsibilities:
 - Lecturer in Epidemiology II, III and IV (Department of Environmental Health)
 - Supervising and participating in various post-graduate research projects, dealing largely with community health and environmental pollution
- IECM (January 2000 – December 2003)
 - Responsibilities:
 - Coega Harbour Environmental Monitoring and Cerebos Saltworks contracts – water and sediment quality analyses, microalgal counts, invertebrate sorting

Recent experience (CEN IEM Unit: 2006 -):

Type of work: Environmental Consulting, including management plans, feasibility assessments, construction auditing, strategic environmental assessments, environmental impact assessments, specialist surveys (e.g. forest mapping and description), public participation, training, project management.

Areas worked in: terrestrial and coastal ecosystems (estuaries and nearshore), industry, urban development, infrastructure (e.g. roads, power lines, waste water treatment works, water supply network), alternative energy projects, waste management, agricultural development, sports and recreational areas, landscaping, community projects.

List of projects worked on at CEN IEM Unit:

Note: Belinda Clark has been the primary author of all the reports listed below. She is responsible for field work, research, public participation, report writing, and project management.

Sensitivity Assessments/Feasibility Studies /Specialist Input Studies

Completed Projects:

1. Sensitivity Assessment of Ashmead Resort in Knysna, Western Cape
2. Sensitivity Assessment for the creation of a high intensity mixed-use waterfront development on Erf 577 and a portion of Erf 578, Kings Beach, Port Elizabeth
3. Sensitivity Assessment of the Old Power Station site in Swartkops, Port Elizabeth
4. Environmental Sensitivity Description of Erven 268, 287 and 288 in the vicinity of Coega, Eastern Cape
5. Environmental Comment on the Proposed Port St Johns Master Plan
6. Environmental Input into the Happy Valley Local Spatial Development Framework Plan
7. Environmental Input into the Inner City Local Spatial Development Framework Plan
8. Environmental Input into the proposed development of a Military Health Unit in Forest Hill, Port Elizabeth
9. Specialist investigation of the Kariega River Estuary in response to a proposed housing development on the eastern bank of the estuary.
10. Specialist vegetation assessment for the EIA for a housing development in Motherwell
11. Specialist Ecological Impact Assessment for the NMBM (Coega) Reclaimed Effluent Scheme – Phase 1
12. Scoping Report: A review of available information of operations at the Manganese Ore Terminal and Storage Facility and Tank Farm on Erf 578 at the Port Elizabeth Harbour area with emphasis on environmental transgressions
13. Sampling protocol to determine the extent of potential contamination in the environment surrounding the Manganese Ore Facility and Fuel Storage Tanks in the Port Elizabeth Harbour
14. Sensitivity assessment of Erf 313 in the Coega area to inform possible land use options
15. Environmental input into a feasibility study to determine suitable locations for 8 rural police stations in Transkei
16. Sensitivity assessment of the area proposed for the 'N2 North Housing Project'.
17. Forest survey of Erf 11305 and 1948, Walmer to inform land use planning
18. Forest survey of an area proposed for sand mining on a Ptn of Remainder of Erf 1948, Walmer, Port Elizabeth
19. Forest survey of the Remainder Ptn 220 of Fam Mauritzkraal No. 501 at Gamtoos River Mouth
20. Forest Survey in Seaview for municipal housing projects
21. Forest Survey of plots on the Sardinia Bay Eco-Estate, Nelson Mandela Bay Municipality
22. Forest Survey of Ptn 15 of Fam Seaview No. 28, Nelson Mandela Bay Municipality to place residential units
23. Preliminary Environmental Screening of properties in Lorraine, Walmer, Greenbushes/Kuyga area, and Colchester under consideration for acquisition by the Nelson Mandela Bay Municipality
24. Assessment of the suitability of plants used in landscaping at Marula Game Ranch in Namibia
25. Environmental Input into a feasibility assessment of a small-boat harbour in Port St Johns
26. Forest Survey on Ptn 0 (Remaining Extent) of Erf 382 in Theesecombe, Nelson Mandela Bay Municipality to inform land use planning
27. Strategic Environmental Assessment for the Happy Valley Development area
28. Development of Ecosystem Guidelines for the Savanna Biome

29. Development of Ecosystem Guidelines for the Thicket Biome
30. Assessment of Water Options for Buccara Wildlife Reserve, Graaff-Reinet.
31. Facilitation of the development of the Motherwell Community and Enviro Hub.

Management Plans

Completed Projects:

1. Development of a Coastal Management Programme for the Nelson Mandela Bay Municipality
2. Operational Environmental Management Plan for the storage of manganese ore at the old power station in Swartkops
3. Operational Management Plan for a cementitious grinding facility in the Coega Industrial Development Zone
4. Operational Management Plan for a bunkering licence application in the Port Elizabeth Port
5. Development of a Coastal Management Programme for the Sarah Baartman District Municipality

Current Projects:

1. Facilitation of upgrades to the Motherwell Buy-Back Centre, and expansion to integrate with an Enviro-Edu facility, food gardens and composting areas – 'Motherwell Community and Enviro Hub'

Project/database management and training

1. Support consultants to the Environmental Management Sub-directorate of the Nelson Mandela Bay Municipality
2. Training facilitator for the Groen Sebenza program in the Environmental Management section of the NMBM

Environmental Auditing

Completed Projects:

1. Environmental Audit for the Upgrading of a Stormwater Channel and Wetland in Blue Water Bay
2. Environmental Audit for the Construction of Kenton Eco-Estate and Associated Infrastructure on the Farm Remainder of Grants Valley 396, Kenton-on-Sea
3. St Francis Bay Marina Extension: Final Audit
4. Environmental auditing for the upgrading of the National Road 2, Section 9 between Witelsbos and Tsitsikamma
5. Environmental auditing of the construction of the Helenvale Thusong Centre in Port Elizabeth
6. Construction auditing of the upgrades to Kings Beach area (Phase 2)
7. Construction auditing of the extension to the industrial area in Graaff-Reinet
8. Construction auditing of the Aberdeen reservoir
9. Review of compliance of an operational sand mine in Theesecombe with conditions of the EMP
10. Environmental audit of the Robberg waste disposal facility in the Bitou Municipality
11. Construction auditing of the cemetery in Graaff-Reinet
12. Construction auditing of Pola Park housing in Uitenhage
13. Construction auditing of Pola Park housing (Extension) in Uitenhage
14. Construction auditing of a cementitious grinding facility in the Coega IDZ
15. Construction auditing of the Graaff-Reinet emergency bulk water scheme
16. Construction auditing for the expansion of the NMU's internal return effluent scheme
17. Construction auditing for a sludge rising main between Cape Recife and Driftsands Waste Water Treatment Works
18. Construction auditing of the establishment of a petroport along the N2
19. Construction auditing of the installation of a pedestrian bridge across the lower reaches of the Baakens River
20. Construction auditing of the establishment of a family residence and infrastructure on Ptn 0 (Remaining Extent) of Erf 382 in Theesecombe, Nelson Mandela Bay Municipality
21. Audit of structures at Lalibela Game Reserve

22. Pre-construction planning and auditing for the establishment of infrastructure and boreholes in the Camdeboo National Park
23. Construction and operational phase auditing of the Noupoort Wind Farm
24. Construction audit of the buffer yard at the Nxuba Wind Farm
25. Pre-construction compliance audit – Latita Tank Farm (Phase 1), Zone 7, Coega Special Economic Zone.

Basic Assessment Reports

Completed Projects:

1. BAR for the proposed erection of an above-ground 2300 l diesel storage tank for a standby generator in an industrial area (Aberdare Cables)
2. BAR for the proposed rezoning and subdivision of a Portion of Erf 349, New Brighton to develop the Helenvale Community Centre (multi-purpose hall and offices) as part of the Helenvale Urban Renewal Programme.
3. BAR for the proposed augmentation of bulk water supply to Nieu-Bethesda, Camdeboo Municipality, Eastern Cape
4. BAR for the establishment of an oyster nursery on Erf 171, Swartkops (old coal power station site).
5. BAR for the proposed development of an Eco-Estate on Portion 190 of Chelsea 25, comprised of 18 residential units and associated infrastructure
6. BAR for the proposed Development and erection of a prototype 300 KW wind turbine adjacent to the Neptune Substation in the Coega IDZ.
7. BAR for the proposed rezoning and subdivision of Portion 75 of the Farm Kragga Kamma No 23 for rural-residential development.
8. BAR for the proposed rezoning, subdivision and consolidation of portions of Erf 1 and Erf 6, and the entire Erf 15831 in Uitenhage to develop housing (Joe Slovo Housing Project).
9. BAR for a desalination plant at the Old Power Station in Swartkops, Port Elizabeth
10. BAR for the construction of a water pipeline in Graaff-Reinet as part of the Drought Emergency Scheme
11. BAR for the construction of a promenade along a section of the Port Elizabeth beachfront
12. BAR for the upgrade of Kings Beach (Phase 2)
13. BAR for the proposed excavation of a portion of the western channel of the Bushmans Estuary, Eastern Cape
14. BAR for the proposed subdivision of Portion 3 of Farm No 43 in Theesecombe into 3 portions, Eastern Cape
15. BAR for the proposed sinking and pumping of two boreholes and further pumping of an additional 3 existing boreholes to supply water to the proposed Cob Creek Estate on Portion 21 of the Farm Kabeljaauws Rivier No 321 in Jeffreys Bay, Eastern Cape
16. BAR for the proposed establishment of lodges and tented camps, as well as the necessary services infrastructure on sections of the following farms in the divisions of Jansenville and Pearston, Eastern Cape Province: Remainder of the Farm Vlak Nek No 31, Ptn 1 of the Farm Vlak Nek No 31, Farm 30, Farm 101, Ptn 1 of the Farm Groot Kloof No 32, Remainder of Farm Groot Kloof No 32, Ptn 1 of the Farm Jacobsdal No 33, Remainder of Farm Jacobsdal No 33, Ptn 1 of the Farm Hinchinbrook No 92, Farm Oudeberg No 94, Ptn 4 of the Farm Smitskraal No 113, Remainder of the Farm Russouwspoor No 115, Remaining Extent of the Farm Smitskraal No 113, and Ptn 1 of the Remaining Extent of the Farm Smitskraal No 113
17. Basic Assessment and Waste Licence application of the upgrade of Kelvin Jones Waste Water Treatment Works (Phase 1)
18. BAR for the proposed construction and operation of a highway rest and service facility and associated infrastructure, including a Waste Water Treatment Plant on Ptn 147 of Farm Gedults River No 411 in the Division of Uitenhage
19. Basic Assessment for Umnyama Park Housing development in Graaff-Reinet
20. Basic Assessment for the rezoning of a portion of Erf 1226 in Fairview for a residential development
21. Basic Assessment for a lodge at Kwandwe Private Game Reserve
22. Basic Assessment for a sludge pumping main to transfer sludge from the Cape Recife Waste Water Treatment Works (WWTW) to the Driftsands WWTW
23. Basic Assessment for a communal jetty on the eastern bank of the Kromme River estuary

24. BAR for the establishment of a staff village at Kwandwe Game Reserve
25. BAR for the implementation of infrastructure needed for water provision in Graaff-Reinet
26. BAR for the expansion of the Mayfield Waste Water Treatment Works in Grahamstown
27. BAR for the expansion to the St Francis Bay WWTW
28. BAR for a gasification plant in Uitenhage
29. BAR for the proposed upgrades to sections of the lower Baakens River Valley
30. BAR for the establishment of a staff village for Kwandwe Private Nature Reserve, Makana Municipality
31. BAR for the development of a residence on Ptn 0 (Remaining Extent) of Erf 382 in Theesecombe, Nelson Mandela Bay Municipality
32. BAR for the upgrades to and expansion of the Nelson Mandela University Return Effluent reticulation system
33. BAR for a shopping centre and filling station in Mount Fletcher
34. BAR for the Florida Heights housing development and bulk infrastructure, Nelson Mandela Bay
35. BAR for the establishment of the George Airport Support Zone, George
36. BAR for the expansion of Mn ore storage capacity at the Old Power Station in Swartkops
37. BAR for the expansion of the Grid Corridor for Electrical Infrastructure for the Impofu Wind Farms.

Current Projects:

1. BAR for the establishment of a resort type development on Erf 168, Colchester
2. BAR for the establishment of a boardwalk and heliport at Noetzie, Knysna
3. BAR for demolition of parts of Bayworld
4. BAR for a light industrial development in the Airport Support Zone in George
5. BAR for the establishment of Battery Energy Storage Systems for the Impofu Wind Farms

Environmental Impact Reports

Completed Projects:

1. EIA for a Low-Density Golf and Agricultural Estate on the Remainder of the Farm Excelsior No 443, Division Joubertina
2. EIA for the Proposed Development of an Integrated Residential Estate on Erven 5614 and 5616, KwaNobuhle, Uitenhage, Eastern Province
3. EIA for the Proposed Establishment of the Sardinia Bay Golf Estate on Erf 378 Theesecombe, Port Elizabeth
4. EIA for Roll-Out Phase of an Aquaculture Operation for the Grow-Out of *Litopenaeus vannamei* Prawn Larvae for Commercial Purposes and a Process Plant, Zones 1 and 10, Coega Industrial Development Zone, Port Elizabeth, Eastern Cape Province
5. EIA for Proposed Construction of a Link Road between Grahamstown Road and Seyisi Street in Port Elizabeth and the upgrading of stormwater infrastructure
6. EIA for the proposed Rezoning and Subdivision of Fams 36 and 37 in Theesecombe, Port Elizabeth for a Rural-Residential Development, Lodge and Associated Infrastructure
7. EIA for the Proposed Rezoning, Subdivision, and Consolidation of Farm Vrede No. 190, Knysna, Western Cape for a Residential Development (Simola Phase 3)
8. EIA and Waste Licence Application for the Proposed Augmentation of the existing Waste Water Treatment Works in Nieu-Bethesda
9. EIA, Waste Licence and Air Emission Licence applications for a pyrolysis plant on Erf 329 in Zone 6 of the Coega IDZ.
10. EIA for the proposed development of a Leisure Estate (Kadouw Leisure Estate) on Remainder of Farm 201, Ptn 15 of Farm 194, and Farm 627 in the Sundays River Valley area

11. EIA for the Proposed Rezoning and Subdivision of Ptn 1 and 118 of the Farm Chelsea 25 (Kragga Kamma Game Park), Port Elizabeth, Eastern Cape
12. EIA for the Proposed Rezoning of Portions 55, 56, 62 and 81 of the Farm Maitland Mines No 478, Uitenhage, Eastern Cape to Establish Lodge Developments and a Nature Reserve
13. EIA for the proposed operation of a 55 MW photovoltaic solar farm on Ptn 2 of the Farm Kraan Vogel Kuil in Pearston.
14. EIA for a landing strip and lodge at Kwandwe Private Game Reserve near Grahamstown.
15. EIA for a proposed housing development and associated infrastructure in Mount Fletcher.
16. EIA for a proposed cement grinding facility in the Coega IDZ
17. EIA for the proposed N2 north housing development.
18. EIA for the Proposed Rezoning and Subdivision of Portion 1 of the Farm Seaview No 28 in Port Elizabeth for a Residential Development and Associated Infrastructure
19. EIA and Coastal Waters Discharge Permit application of the expansion of the Cape Recife Waste Water Treatment Works and new marine outfall sewer (Scoping Report)
20. EIA and Coastal Waters Discharge Permit application for a proposed marine pipeline servitude in the Coega IDZ (Scoping Report)
21. EIA for the establishment of the Bloemendal Arterial and Link Road in the Bethelsdorp area, NMBM.

Current Projects:

1. EIA and Air Emission Licence for a tantalum processing plant in the Coega IDZ
2. EIA, Waste Licence and Air Emission Licence for a waste incinerator at Deal Party, Gqeberha.

Water Use Applications

Completed Projects

1. Water Use Application for the proposed construction of a pipeline across a stream in Graaff-Reinet
2. Water Use Application for the upgrading of stormwater infrastructure that crosses a portion of the Klein Vis Rivier in Somerset East.
3. General Authorisation Application for clearing alien trees and establishment of a temporary mobile gasification plant outside Uitenhage
4. Water Use Application for the establishment of the Bloemendal Arterial and Link Road
5. Water Use Application for irrigating with treated effluent from a package plant at a staff village in Kwandwe
6. Water Use Application for the installation of litter booms in 3 rivers in Nelson Mandela Bay.

Current Projects

1. Water Use Application for disposal of treated effluent and/or irrigation at the proposed Island Vibes resort development in Colchester
2. Water Use Application for borehole abstraction for dust suppression at the Mn ore storage facility in Swartkops.



Registration No. 2019/1336

Herewith certifies that

Belinda Joan Clark

is registered as an

Environmental Assessment Practitioner

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

Effective: 01 March 2022

Expires: 28 February 2023

Chairperson

Registrar



University
of
Port Elizabeth



Universiteit
van
Port Elizabeth

This is to certify that, the
requirements having been
satisfied, the degree of

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LENDI NI FUPAANSE POL
COMMUNITY SERVICE CERTIFICATE
2018-02-02
CSC
SOUTH AFRICAN POLICE

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VOOR DIE SOUTH AFRICAN POLICE COMMUNITY SERVICE CERTIFICATE (CSC)

I HEREBY CERTIFY THAT THE CANDIDATE IS A FULL
MEMBER OF THE SOUTH AFRICAN POLICE COMMUNITY SERVICE
CERTIFICATE (CSC) AND IS ELIGIBLE FOR THE BACCALAUREUS
SCIENTIAE DEGREE OF THE UNIVERSITY OF PORT ELIZABETH
ON THE BASIS OF THE INFORMATION /
INFORMASIE WAT HANDELSREKINGE VOOR DIE SOUTH AFRICAN
POLICE COMMUNITY SERVICE CERTIFICATE (CSC) WAT HANDELSREKINGE
VOOR DIE SOUTH AFRICAN POLICE COMMUNITY SERVICE CERTIFICATE (CSC)

BELINDA JOAN CLARK

MAATSTROMINGS
POLICE NUMBER 71725571
NAAM IN EISEN SKRIF
HANDELSREKINGE
71725571
RIPPEL


Vice-Chancellor / Vise-Kanselier


Registrar / Registrateur

Port Elizabeth
19 April 1997



University
of
Port Elizabeth



Universiteit
van
Port Elizabeth

This is to certify that, the requirements having been satisfied, the degree of

Hiermee word verklaar dat, nadat aan die vereistes voldoen is, die graad

Baccalaureus Scientiae Honores

(Botany / Botanica)

has been conferred upon

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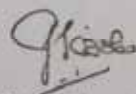
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BELINDA JOAN CLARK

MANIFESTASIONSPERSONATIE

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PORT ELIZABETH BANK

NAAM IN DRIEHOEF
NAME IN DRIEHOEF DE RIDDER


Vice-Chancellor / Vice-Kanselier


Registrar / Registrateur

Port Elizabeth
18 April 1998

University
of
Port Elizabeth



Universiteit
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Port Elizabeth

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requirements having been
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Magister Scientiae
(Botany / Botanie)

has been conferred upon



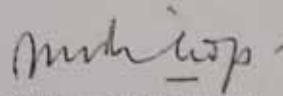
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Vice-Chancellor / Vise-Kanselier


Registrar / Registrateur



Port Elizabeth
21 April 2001

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.

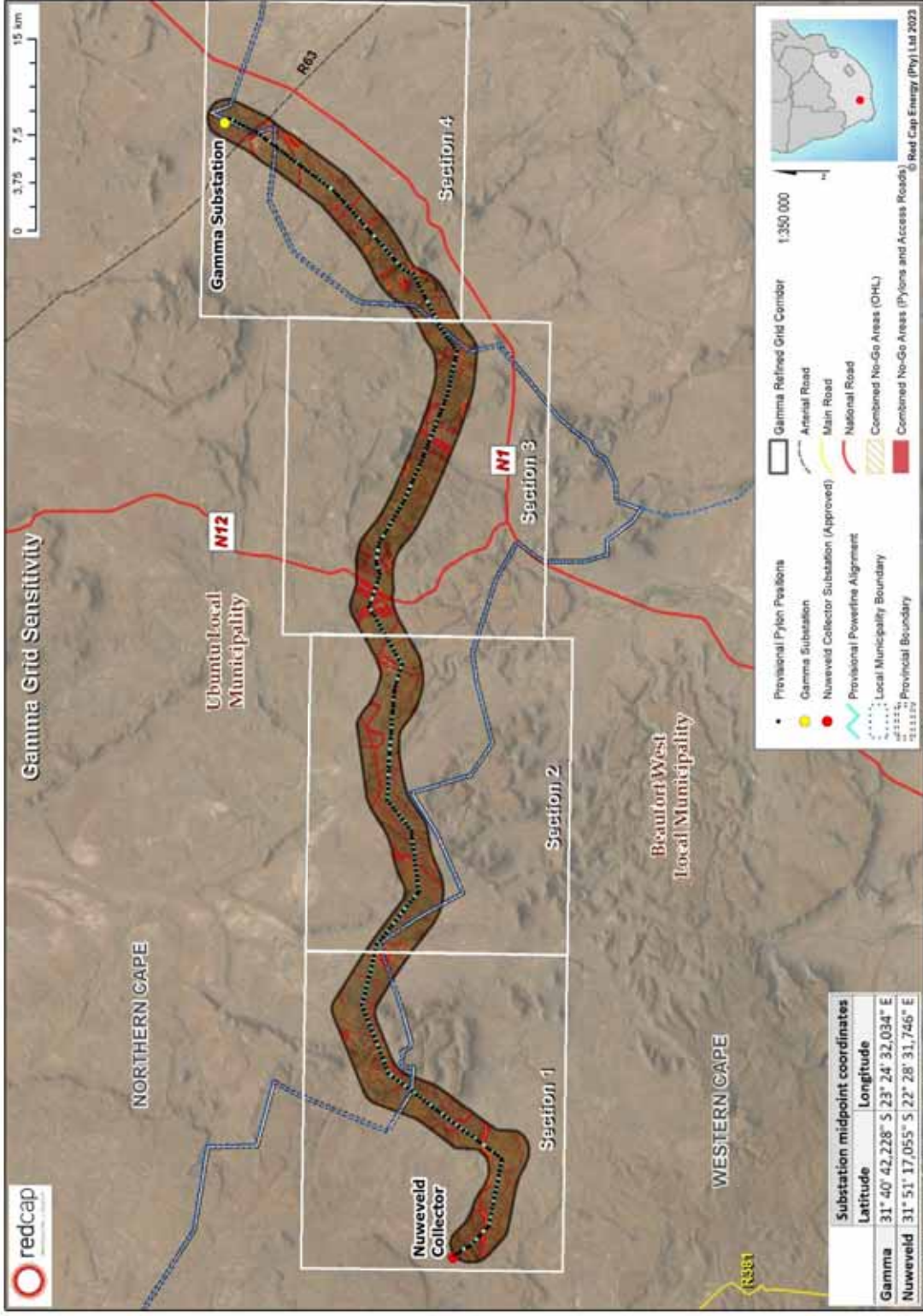


Figure 2a: Refined corridor and pre-negotiated route of the proposed 400 kV line with preliminary pylon positions overlaid on specialist identified pylon and access road No-Go layers and overhead line No-Go layers (Overview)

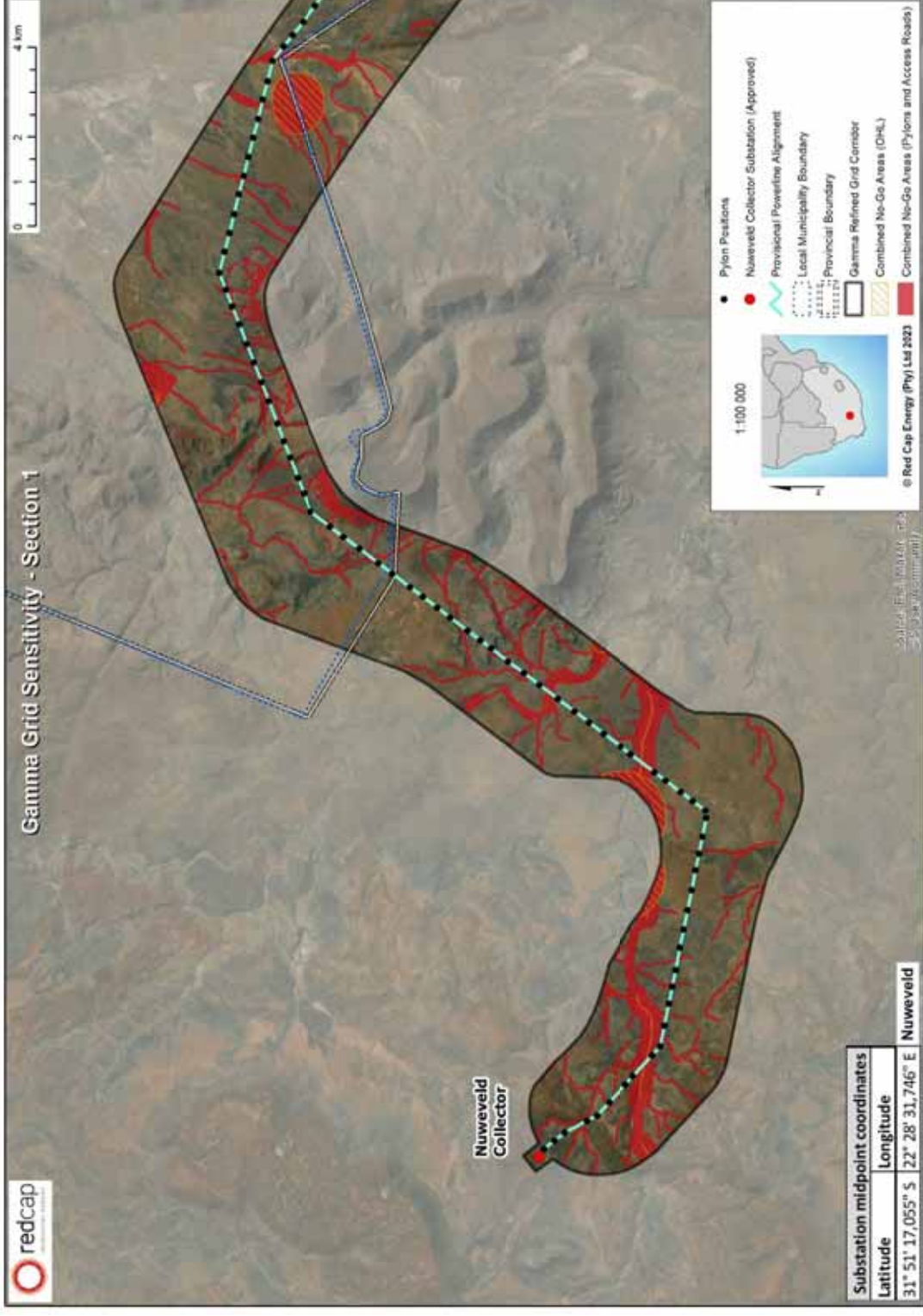


Figure 2b: Refined corridor and pre-negotiated route of the proposed 400 kV line with preliminary pylon positions overlaid on specialist identified pylon and access road No-Go layers and overhead line No-Go layers (Section 1)

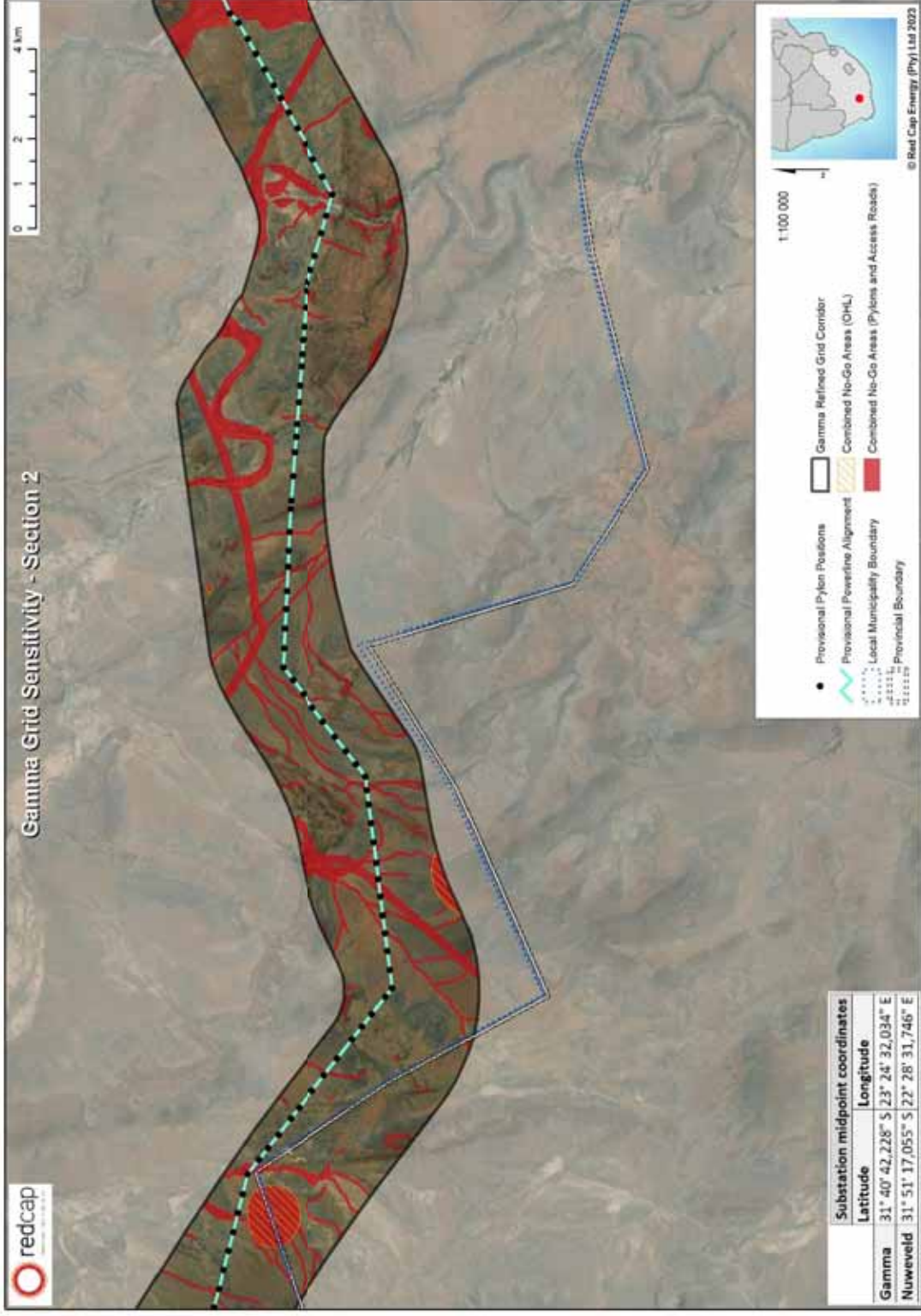


Figure 2b: Refined corridor and pre-negotiated route of the proposed 400 kV line with preliminary pylon positions overlaid on specialist identified pylon and access road No-Go layers and overhead line No-Go layers (Section 2)

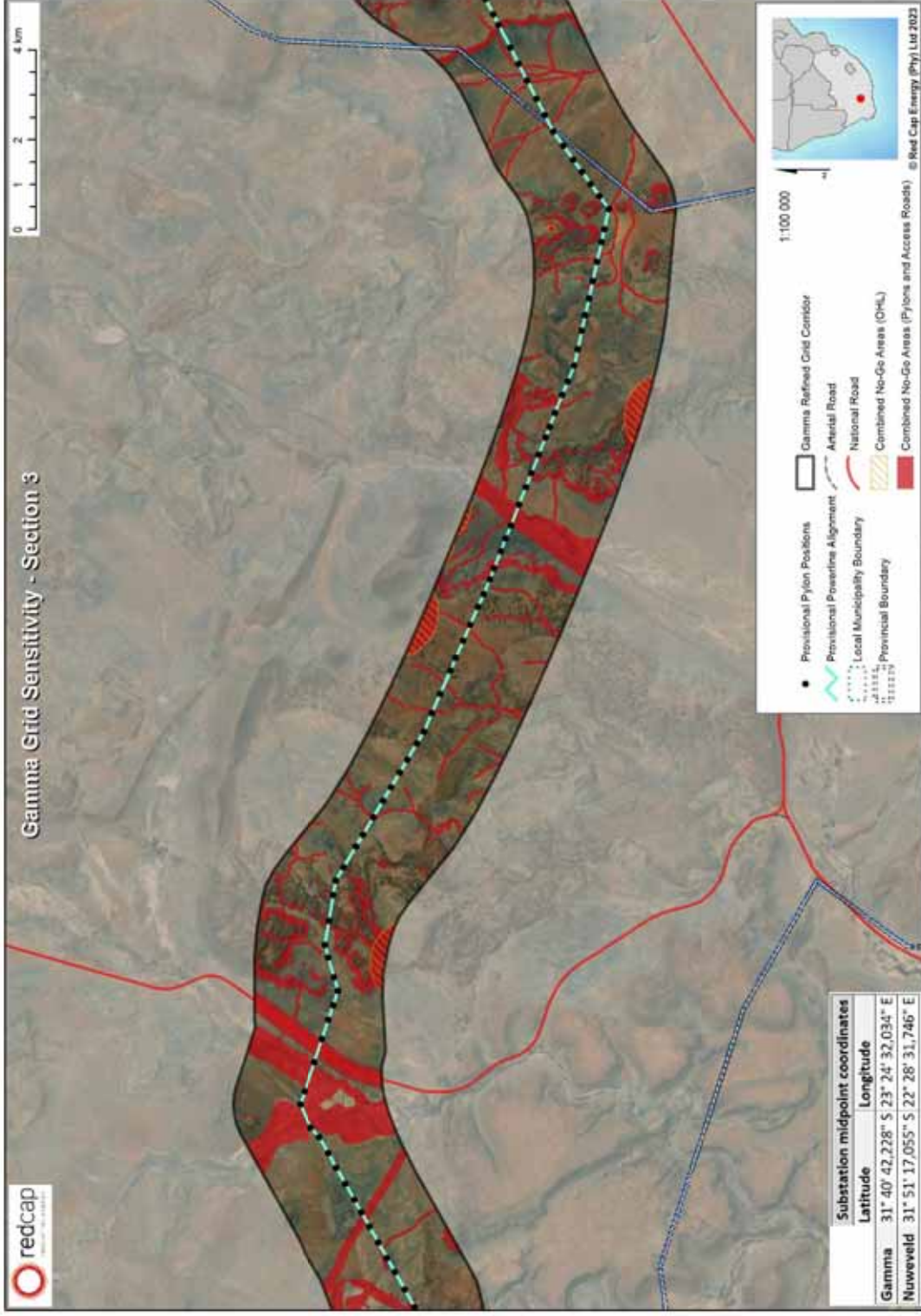


Figure 2b: Refined corridor and pre-negotiated route of the proposed 400 kV line with preliminary pylon positions overlaid on specialist identified pylon and access road No-Go layers and overhead line No-Go layers (Section 3)

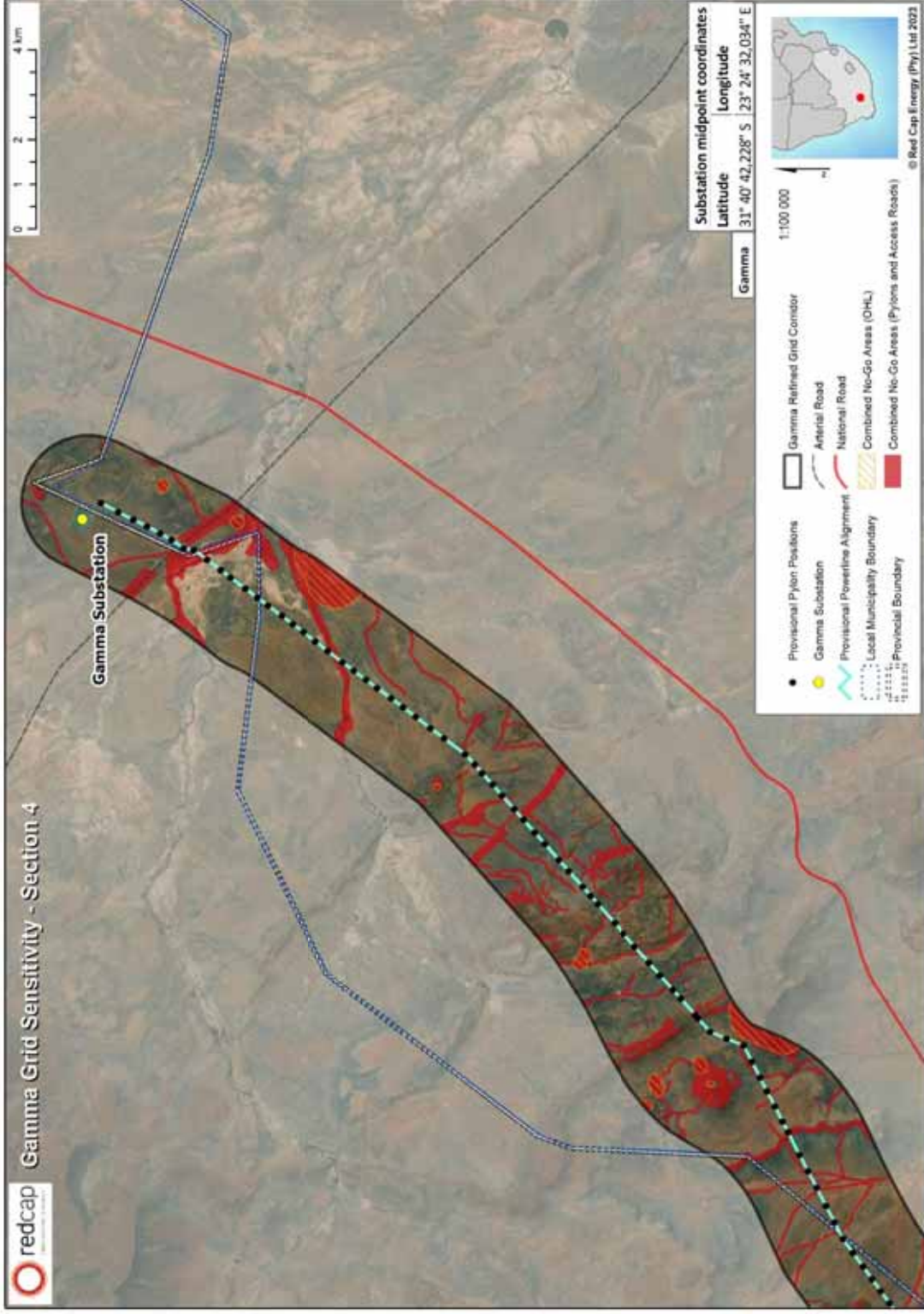


Figure 2b: Refined corridor and pre-negotiated route of the proposed 400 kV line with preliminary pylon positions overlaid on specialist identified pylon and access road No-Go layers and overhead line No-Go layers (Section 4)

Screening Tool Report Sensitivity Maps

Agriculture:



Figure 4: Agricultural Theme - Medium Sensitivity. The agricultural specialise did a site verification and compliance statement, confirming the Corridor is generally of Low Sensitivity with isolated pockets of High Sensitivity areas (i.e. cultivated lands).

Animal Species:

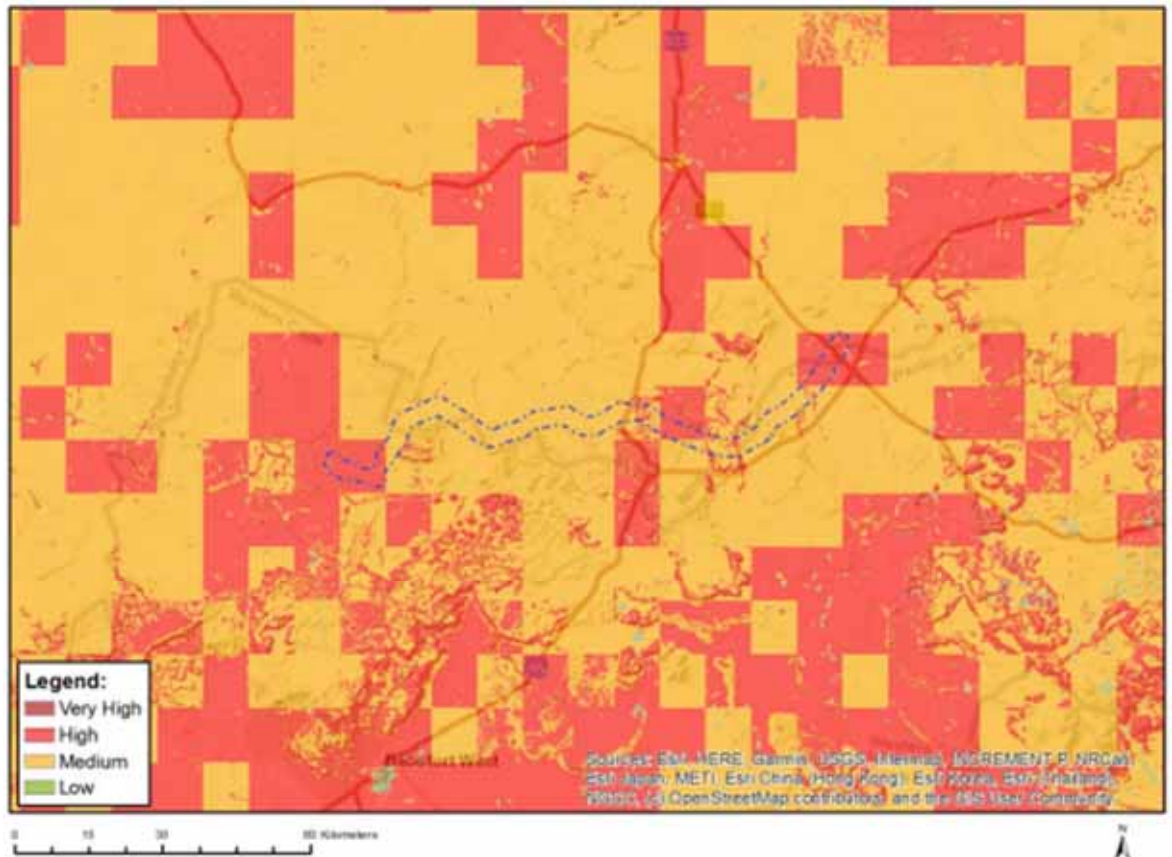


Figure 5: Animal Species Theme – High Sensitivity. Twelve SCCs are listed within the Corridor. The terrestrial ecologist indicated a High Sensitivity for the Riverine Rabbit and a Medium Sensitivity for the Karoo Dwarf Tortoise. The Avifaunal Specialist confirmed the High Sensitivity rating for powerline sensitive bird species.

Plant Species:

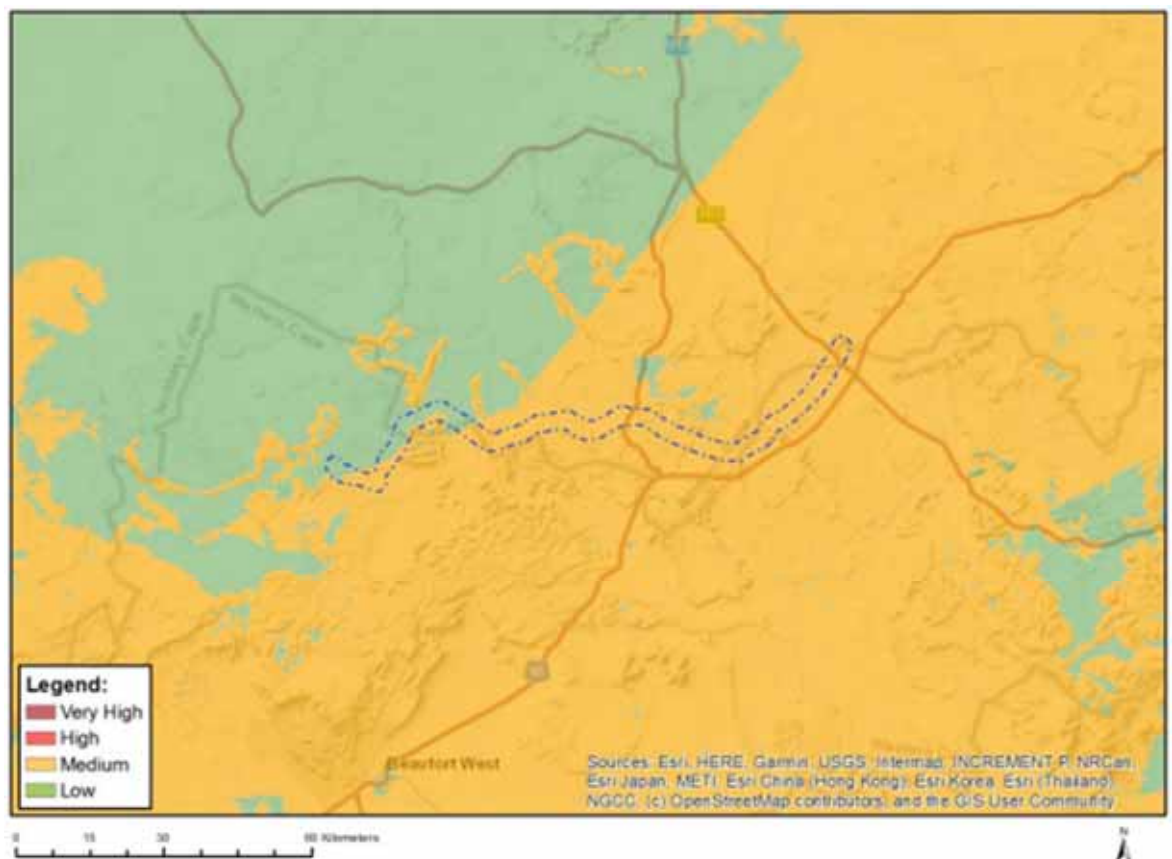


Figure 6: Plant Species Theme – Medium Sensitivity. Five SCCs are listed within the Corridor. The terrestrial ecologist indicated a Low Sensitivity for plant species.

Terrestrial Biodiversity:

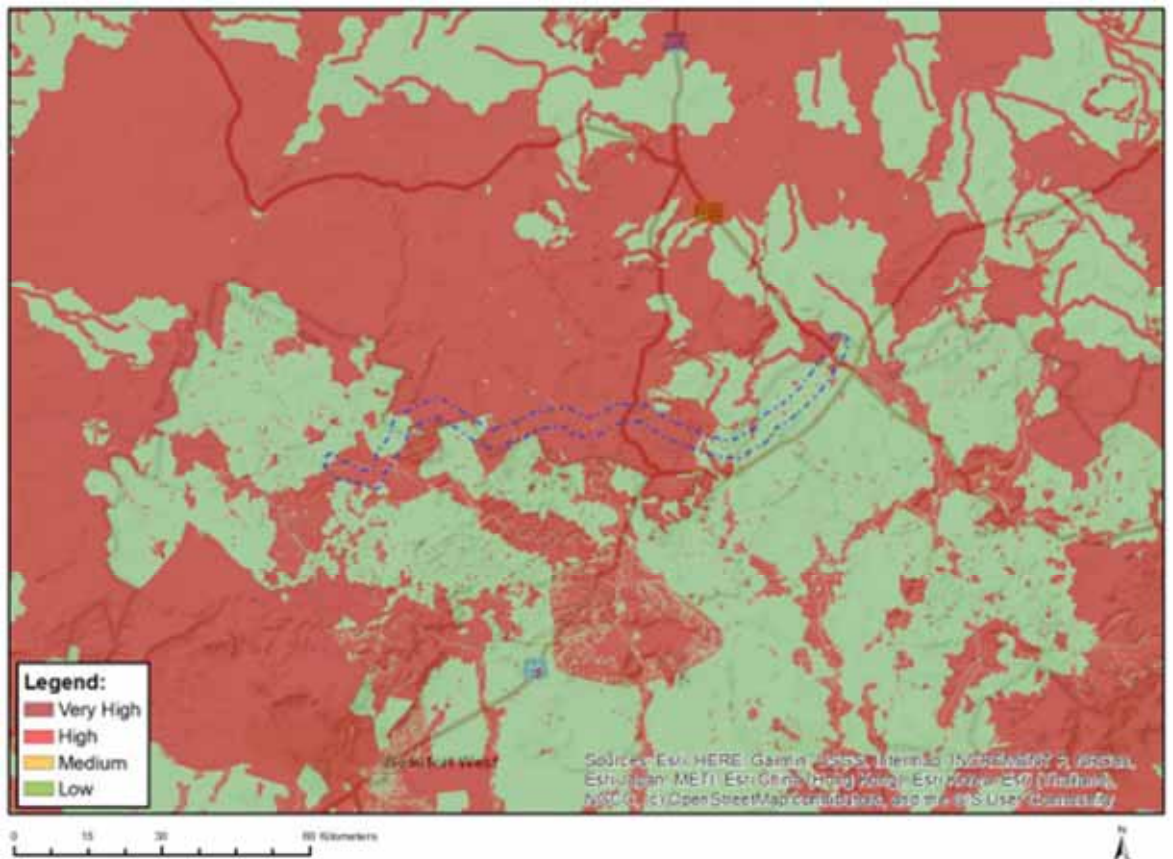


Figure 6: Terrestrial Biodiversity – Very High because the Corridor contains CBAs, ESAs, Protected Areas Expansion Strategy, and FEPA Sub-catchments. The Terrestrial Ecologist confirmed these features occur within the Corridor.

Aquatic Biodiversity:

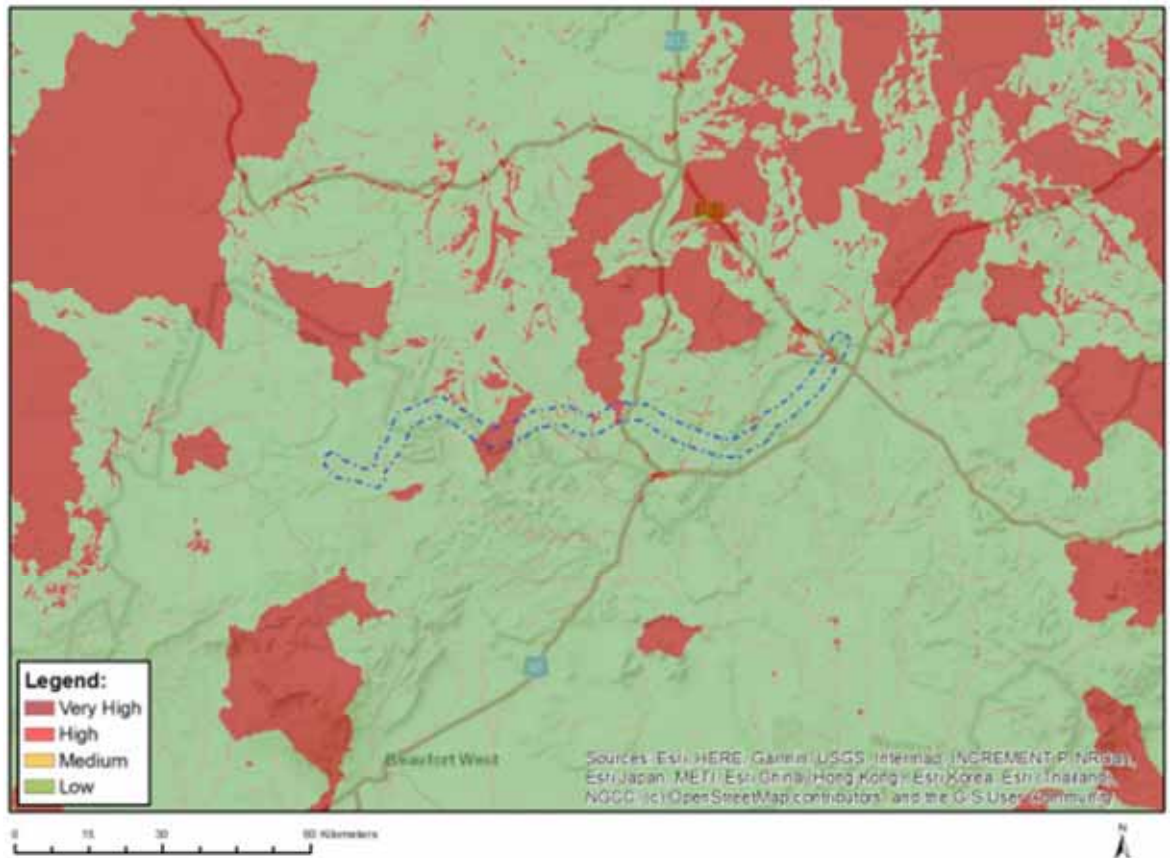


Figure 7: Aquatic Biodiversity Theme – Very High Sensitivity because the Corridor includes Aquatic CBAs, Rivers, Wetlands and Freshwater EPA quinary catchments. The aquatic biodiversity specialist confirmed the larger watercourses are high sensitivity features, while the smaller tributaries/drainage features are medium sensitivity features.

Archaeological/Cultural Heritage:



Figure 8: Archaeology/Cultural Heritage Theme – Low Sensitivity. The specialist confirmed the Low sensitivity rating for most of the Corridor, but with pockets of High sensitivity.

Palaeontology:

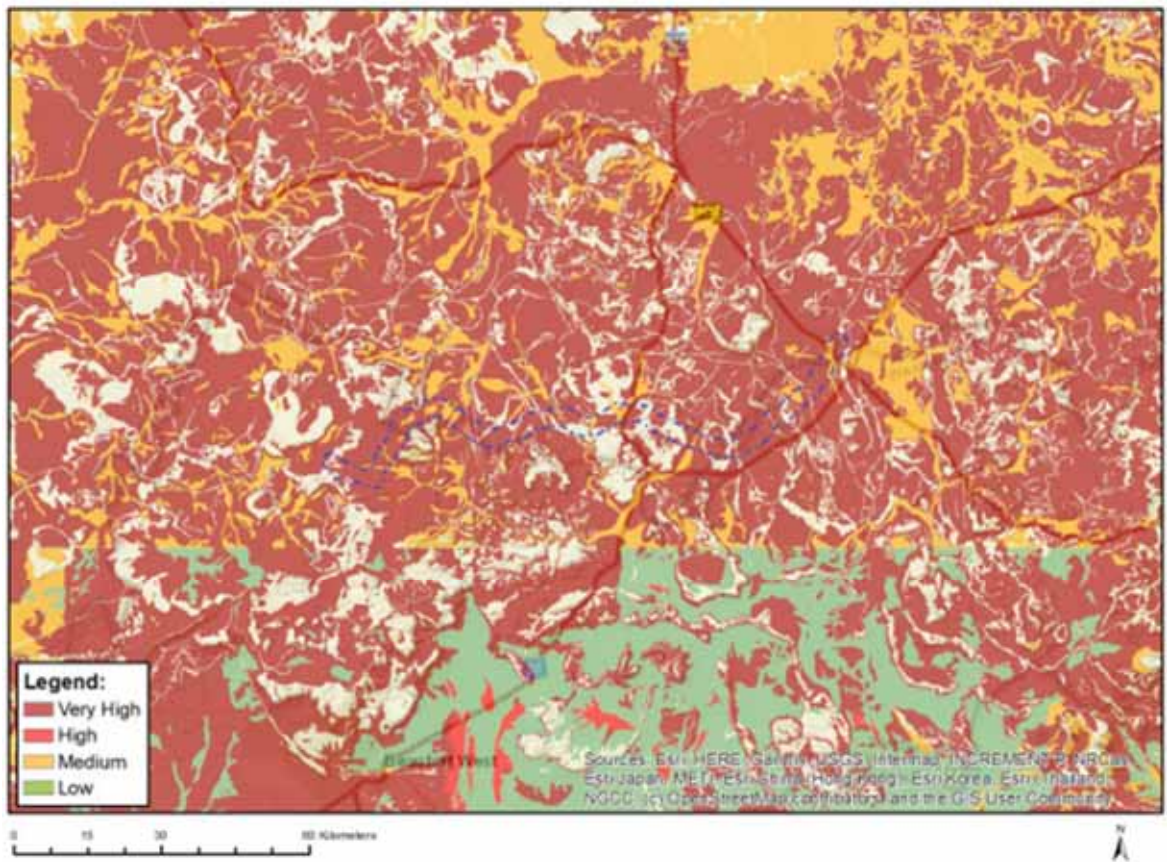


Figure 9: Paleontological Theme – Very High Sensitivity. The specialist disputed the sensitivity rating and confirmed a generally Low Palaeontological sensitivity in the Grid Corridor.

7.3 Sub-section 3: Declaration

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

Signature Proponent/applicant/ holder of EA

Date:



10 May 2023

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

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

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and 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.

8.1 Specific Mitigation Measures for the 400 kV gridline

Terrestrial Ecology

Planning and Design

Impact management outcome: Minimise disturbances in sensitive habitats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Minimise the development footprint as far as possible. Avoid mapped No-Go areas in the placement of pylons and access tracks.			Planning and Design			
Minimise the development footprint in areas mapped as high sensitivity (i.e. near watercourses and other ecologically significant features). Existing roads through the NPAES areas should be used as far as possible.			Planning and Design			
Existing tracks through these areas should be used where possible.			Planning and Design			
A pre-construction walk-down of the final power line route must be done by a terrestrial ecologist for micro-siting the final positions of pylons and any new access roads that may be required; as well as to identify protected and listed species for permitting requirements. Micro-siting must focus on areas identified as 'High Sensitivity' for the Riverine Rabbit and Karoo Dwarf Tortoise.			Planning and Design			
All pylon footprints must be surveyed by the ecologist to avoid possible populations of plant SCCs, and to place infrastructure in the least sensitive areas to minimise			Planning and Design			

impacts on the features that make up CBAs and ESAs.							
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Impact management outcome: Prevent faunal mortalities							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Appropriate design of roads and other infrastructure to minimise faunal impacts and allow fauna to pass over, through or underneath these features as appropriate.			Planning and Design				
A 'Search-and-Rescue' must be done before construction in areas of high quality (sensitivity) Karroo Dwarf Tortoise habitat as identified and mapped during a pre-construction walkthrough of the gridline.			Planning and Design				

Impact management outcome: Promote faunal connectivity							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
The final design of roads and other infrastructure must consider faunal movement, and must allow fauna to pass over, through or underneath these features as appropriate.			Planning and Design				

Construction

Impact management outcome: Minimise disturbances in sensitive habitats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Minimise the development footprint as far as possible.			Construction			
Locate temporary-use areas such as construction camps and lay-down areas in low sensitivity or previously disturbed areas.			Construction			
Clearly demarcate riparian areas near to the development footprint as No-Go areas with appropriate signage and barriers.			Construction			
Construction staff should remain within the construction footprint and on designated access tracks, and must not wander into the veld.			Construction			
Monitoring of construction activities to ensure that the development footprint within CBAs is restricted to the authorised development footprint.			Construction			
Areas disturbed during construction that will not remain as permanent features must be rehabilitated.			Construction			

Impact management outcome: Prevent Faunal Mortalities						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
A log of faunal kills must be kept in construction phase, and reviewed monthly by the ECO. Should rabbits and/or tortoises be killed by traffic, then the traffic management to and from the site should be reviewed in collaboration with the EWT Drylands Programme to identify additional mitigation and avoidance that needs to be implemented to further reduce roadkill.			Construction			
All vehicles should adhere to a low speed limit on site. Heavy vehicles must be restricted to 30 km/h and light vehicles to 40 km/h.			Construction			
Driving between sunset and sunrise should be minimised as this is when Riverine Rabbits are most active, and the collision risk is highest.			Construction			
Should rabbits be killed by traffic, then the traffic management to and from the site should be reviewed in collaboration with the EWT Drylands Programme to identify additional mitigation and avoidance that needs to be implemented to further reduce roadkill.			Construction			
No dogs should be allowed on site and precautions to ensure there is no poaching or other direct faunal disturbance on site must be implemented.			Construction			
No fauna, including tortoises, should be disturbed or removed from the veld.			Construction			
No holes or trenches should be left open for extend periods as tortoises may fall in and become trapped. Trenches should have soil ramps that allow tortoises and other small fauna to escape. Holes should also be checked regularly for tortoises and other animals that may have fallen in.			Construction			

Impact management outcome: Plant search and rescue exercise done to ensure maximum survival potential						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Obtain Permit for endangered or protected species listed in Schedule 3 and 4 respectively in terms of the Western Cape Nature Conservation Laws Amendment Act 2000 from Cape Nature before removing plants.			Construction			
Use removed vegetation the in the rehabilitation process.			Construction			
Identify a suitable location for search and rescued plants before removal takes place. The micro-climate must be suitable for the species and the season must be considered to give the plants an adequate chance to establish.			Construction			
Extreme caution must be taken during the removal of plants to ensure they are not damaged in the process			Construction			
Keep livestock out of areas that are being rehabilitated for a period to allow plants to establish			Construction			

Operations

Impact management outcome: Minimise disturbance on sensitive habitats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

Service staff should remain within the power line footprint areas and access routes and should not be allowed to wander into the veld.				Operations		
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Impact management outcome: Prevent faunal mortalities						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All service vehicles on site should adhere to a low speed limit on site. Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h.			Operations			
No fauna including tortoises should be disturbed or removed from the veld.			Operations			
A log should be kept detailing and fauna-related incidences or mortalities that occur on site, including roadkill, electrocutions etc. These should be reviewed annually by the Environmental Officer and used to inform operational management and mitigation measures.			Operations			
Annual surveys of the powerline must be done to check for crow nests and tortoise carcasses. Nests located within 1 km of suitable Karoo Dwarf Tortoise habitat must be removed. Records must be kept of tortoise carcasses especially under crows' nests if present.			Operations			
Apply additional mitigation in consultation with a terrestrial ecologist to prevent roadkill mortalities and/or to discourage predation by crows if monitoring shows these aspects are causing persistent impacts on the Karoo Dwarf Tortoise.			Operations			

Avifauna

Planning and Design

Impact management outcome: Minimise potential disturbance on sensitive bird species						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Conduct an avifaunal walk-through of the final powerline alignment to identify priority species that may be breeding within the final footprint. If a SSC nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimizing the potential disturbance to the breeding birds during the construction period, if possible. This could include measures such as delaying some of the activities until after the breeding season.			Planning and Design			

Impact management outcome: Limit disturbance of sensitive habitats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Avoid No-Go areas			Planning and Design			
Maximum use must be made of existing roads and the construction of new roads must be kept to a minimum to			Planning and Design			

reduce the extent of habitat fragmentation								
Where technically possible, the proposed gridline must run next to existing high voltage lines as far as possible to reduce habitat fragmentation.				Planning and Design				

Impact management outcome: Prevent collisions by birds with powerlines								
Impact Management Actions	Implementation			Monitoring				
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance		
Eskom-approved Bird Flight Diverters must be fitted to the gridline where it traverses areas of medium and high avifauna sensitivity, according to the applicable Eskom Engineering Infrastructure (Eskom Unique Identifier 240 – 93563150: The utilisation of bird flight diverters on Eskom Overhead Lines).			Planning and Design					
Mark the line at the dam situated at 31°48'16.44"S, 22°57'51.38"E with LED type bird flight diverters to ensure visibility of the line during low light conditions, should the dam at any given time be used as a roost site by Blue Cranes			Planning and Design					

Construction

Impact management outcome: Limit disturbance of sensitive habitats	
Impact Management Actions	Monitoring

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Construction activities must be restricted to the immediate footprint			Construction			
Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.			Construction			
Vegetation clearance must be limited to what is absolutely necessary and the mitigation measures proposed by the vegetation specialist must be strictly implemented			Construction			
Measures to control noise and dust should be applied according to current best practice in industry.			Construction			

Operations

Impact management outcome: Prevent collisions by birds with powerlines						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Maintain the LED type bird flight diverters at the dam situated at 31°48'16.44"S, 22°57'51.38"E throughout operations			Operations			

Aquatic

Planning and Design

Impact management outcome: Limit disturbance of sensitive habitats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Locate all infrastructure outside of No-Go areas.			Planning and design			
Limit the placement of infrastructure in areas of medium aquatic sensitivity as far as possible.			Planning and design			
Rationalise infrastructure as far as possible by sharing of the infrastructure or using existing disturbed areas (e.g., roads and access tracks).			Planning and design			
Existing roads through features mapped as medium sensitivity must be utilised as far as possible. In terms of new service tracks, these must be kept to a minimum and should ideally not result in any new / permanent water course crossings, but if these are required, then a specific walkdown should be conducted with the specialist to identify the most suited crossing position.			Planning and design			

Impact management outcome: Prevent flooding and erosion	
Impact Management Actions	Monitoring

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Ensure road crossings structures are properly designed to not result in blockage in the watercourses or erosion.			Planning and design			
The design of an access track and other infrastructure should aim to reduce the intensity of runoff, particularly on the steeper slopes and reduce the intensity of the discharge into the adjacent drainage lines.			Planning and design			
The project infrastructure and access tracks must be designed to mitigate the stormwater runoff impacts leaving the developed areas.			Planning and design			
Where necessary, stormwater management systems at access tracks must be designed to dissipate stormwater over a broad area covered by natural vegetation or to direct stormwater to berms or channels and swales adjacent to hardened surfaces.			Planning and design			

Impact management outcome: Use water sustainably						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Source water from legal supply sources only (e.g. new or existing water allocation to a property and/or municipal supply).			Planning and design			
A Water Use Authorisation must be obtained for any activities that trigger Section 21 activities under the NWA.			Planning and design			

Construction

Impact management outcome: Prevent and address erosion						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Where these crossings (over rivers) do occur, it needs to be monitored for erosion			Construction			
The stormwater system must be inspected annually, but this should also be done after every major rainfall event.			Construction			
Possible erosion points need to be monitored and rehabilitated when needed.			Construction			
Areas susceptible to erosion must be protected by installing the necessary temporary structures			Construction			

Impact management outcome: Limit disturbance of sensitive habitats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Minimise any works within aquatic ecosystems and buffers			Construction			
Construction sites and laydown areas should be placed at least 35m away from the delineated aquatic features			Construction			

Rehabilitate disturbed areas				Construction			
Disturbed areas may need to be rehabilitated and revegetated in line with the requirements of the Generic EMP for power line development.				Construction			
Impact management outcome: Dealing with spills and incidences in line with Section 28 and 30A of NEMA							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Spills, leaks or incidences must be handled in terms of the duty of care principle under Section 28, and Section 30A of NEMA			Construction				
Any significant spills, leaks or incidences must be reported to the Department of Water and Sanitation and the DEA&DP's Directorate Pollution and Chemicals Management.			Construction				

Operations

Impact management outcome: Limit disturbance of sensitive habitats							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Access project infrastructure using existing roads and access tracks established during maintenance activities.			Operations				
Stormwater runoff infrastructure must be maintained to mitigate both the flow and water quality impacts of any stormwater leaving developed areas.			Operations				

Impact management outcome: Address alien plant invasion and address erosion						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Invasive alien plant growth and signs of erosion should be monitored biannually for three years to ensure that the disturbed areas do not become infested with invasive alien plants.			Operations			

Archaeology and Cultural Heritage

Planning and Design

Impact management outcome: Prevent disturbances to archaeological resources and graves						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Avoid No-Go areas			Planning and design			
A pre-construction archaeological survey should be carried out along the entire alignment, including new access roads and construction camps.			Planning and design			
The recommended archaeological pre-construction survey must be done by qualified archaeologist and must be done prior to ground clearance			Planning and design			

Impact management outcome: Limit impacts on the cultural landscape						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Sensitive viewsheds (e.g. ridges) as indicated by the visual consultants must be avoided			Planning and design			

Construction

Impact management outcome: Prevent disturbances to archaeological resources and graves						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Prohibit access to No-Go areas			Construction			
If any evidence of archaeological sites or remains, fossils or other categories of heritage resources are found during the proposed development; SAHRA (Natasha Higgitt - 0212028660) must be alerted as per Section 35(3) of the NHRA. Non-compliance with this section is an offence in terms of Section 51(1)(e) of the NHRA, and item 5 of the Schedule.			Construction			
If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves Unit (Thingahangwi Tshivhase / Ngqabutho Madida 0123208490) must be alerted immediately as per Section 36(6) of the NHRA. Non-compliance with this section is an offence in terms of Section 51(1)(e) of the NHRA, and item 5 of the Schedule			Construction			
A qualified archaeologist must be appointed to undertake the work in terms of a permit that is applied for.			Construction			
If heritage resources are uncovered during the course of the development, a qualified archaeologist or palaeontologist (depending on the find) must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resource proves to be of archaeological or paleontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA			Construction			

Impact management outcome: Limit impacts on the cultural landscape						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Keep the construction period as short as possible			Construction			
Ensure that disturbed areas that are not required for operations are rehabilitated			Construction			

Operations

Impact management outcome: Limit impacts on the cultural landscape						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Ensure that maintenance vehicles stay on designated roads to prevent new landscape scarring			Operations			

Paleontology

Planning and Design

Impact management outcome: Prevent disturbances to palaeontological resources						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
At detailed design stage, the final layout must be evaluated by a paleontologist to determine which areas, if any, need a pre-construction survey. Potentially sensitive areas must be surveyed to micro-site the final position of infrastructure and new roads (where required) to avoid sensitive palaeontological sites.			Planning and design			
Avoid the placement of any infrastructure in areas of very high palaeontological sensitivity			Planning and design			
The recommended palaeontological pre-construction survey must be done by qualified paleontologist, and must be done prior to ground clearance			Planning and design			

Construction

Impact management outcome: Prevent disturbances to palaeontological resources						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

Apply a Chance Fossil Finds Procedure (see Appendix 2)			Construction		
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Geotechnical

Planning and Design

Impact management outcome: Manage stormwater to prevent erosion					
Impact Management Actions	Implementation			Monitoring	
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Evidence of compliance
Stormwater Management Plan must be developed in the preconstruction phase and should detail the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil.			Planning and design		
Any road cuttings should be designed by an appropriately qualified professional.			Planning and design		
Drainage in the region should be designed appropriately.			Planning and design		

Impact management outcome: Prevent erosion					
Impact Management Actions	Implementation			Monitoring	
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Evidence of compliance

Select pylon positions on 1:4 slopes or shallower, where possible			Planning and design		
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Impact management outcome: Limit disturbance of sensitive habitats					
Impact Management Actions	Implementation			Monitoring	
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Evidence of compliance
No-Go Areas (areas that shall be excluded from any construction activity or general access by the construction team) within the development sites or servitudes shall be clearly indicated on maps and included with the micro-siting reports or attached to the EMPr.			Planning and design		
Use existing access tracks where feasible			Planning and design		
Observe limits of acceptable disturbance for areas of high, medium and low sensitivity			Planning and design		

Impact management outcome: Confirm the geotechnical suitability of each pylon position					
Impact Management Actions	Implementation			Monitoring	
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Evidence of compliance
Investigate and confirm the geotechnical suitability of each pylon position prior to construction (i.e. that soil with an adequate bearing capacity is obtained beneath each footing).			Planning and design		

Construction

Impact management outcome: Prevent water and soil contamination						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Install temporary drainage to divert stormwater away from active construction activities, where required			Construction			
Park within designated areas			Construction			

Impact management outcome: Prevent erosion						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Only strip vegetation necessary for the next phase of construction			Construction			
Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use.			Construction			

Impact management outcome: Limit disturbance of sensitive habitats						
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
Do not enter No-Go areas			Construction			
Limit disturbance footprints to the area absolutely necessary for the project			Construction			

Impact management outcome: Improve the quality of cement						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Favour dolerite as a cement aggregate (as opposed to Karoo sandstones and mudstones)			Construction			

Operations

Impact management outcome: Prevent erosion						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Any erosion / sedimentation must be resolved through whatever additional interventions may be necessary (i.e., extension, energy dissipaters, spreaders, etc).			Operations			
Drainage in the region should be managed appropriately.			Construction			
No regular maintenance activities to take place outside of the authorised footprint and all vehicles to remain on authorised roads and tracks.			Construction			

Visual

Planning and Design

Impact management outcome: Limit visual intrusion						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Avoid visually sensitive skylines, where possible, when routing the powerline			Planning and design			
Avoid visual No Go areas when routing the powerline (including scenic gorges and cliffs and slopes steeper than 1:4 for pylon placement)			Planning and design			
Align the proposed gridline as close to existing Eskom infrastructure as possible			Planning and design			
Should the route of the proposed pre-negotiated grid connection be changed, the visual specialists must verify that this does not affect the visual impact significance as assessed in this report and must approve the revised route in writing			Planning and design			

Construction

Impact management outcome: Limit visual intrusion						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Locate staging areas in unobtrusive positions away from farmsteads, scenic features, and scenic routes			Construction			

Impact management outcome: Limit visual scarring						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Use existing roads and tracks as far as possible for construction			Construction			
Rehabilitate / revegetate disturbed areas as soon as construction is complete in the area			Construction			
Monitor visual mitigation measures on an on-going basis, including the maintenance of rehabilitated areas			Construction			

Traffic

Planning and Design

Impact management outcome: Prevent road incidents <i>and maintain public access</i>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Complete a Transport Management Plan once the contractor has been appointed and all the relevant details of the construction process are known. The Transport Management Plan needs to address, inter alia:			Planning and design			

<ul style="list-style-type: none"> o clearly define the route to the site for specific vehicles needed to transport equipment and materials o schedule delivery to avoid local congestion o all equipment and material transported via the DR02311 and the TR05801 shall be limited to a gross vehicle mass of ten tonnes 						
<p>The treacherous southern section of the gravel road, between Beaufort West and site, TR05801, is to be upgraded by the developer, to improve the safety of the road for all road users, including the personnel commuting to and from the site on a daily basis</p>			Planning and design			
<p>Provide the Western Cape Government: Road Planning the opportunity to assess the final overhead route and issue the required wayleave approvals in terms of Act 21 of 1940, building restrictions where applicable, and Roads Ordinance 19 of 1976, accesses and construction activities within and across the road reserves and their adjacent building lines</p>			Planning and design			
<p>Provide the exact location of each pylon to the WCG: Road Planning branch prior to construction</p>			Planning and design			
<p>Provide the accesses to each respective farm portion traversed by the Gamma Grid Corridor, including ownership of those portions and intended access use - in line with this Branch's Access Management Guidelines, 2020, to the WCG: Road Planning branch prior to construction</p>			Planning and design			
<p>Apply for way-leaves to the WCG Roads Planning Branch prior to construction for third party services that will be constructed, if any, when building restrictions, building lines and road reserves are to be affected</p>			Planning and design			
<p>Apply for any geometric and materials designs to the WCG Roads Planning Branch prior to construction and once detail of energy infrastructure and once transportation equipment are known.</p>			Planning and design			

Provide a route clearance report for abnormal loads to the WCG Roads Planning Branch prior to construction and once detail of energy infrastructure and once transportation equipment are known.			Planning and design			
Provide a geotechnical and geometric design report, including improvement proposals to the WCG Roads Planning Branch prior to construction			Planning and design			
Apply for the approval of any design affecting any Proclaimed Provincial Road to the WCG Roads Planning Branch Chief Directorate Road Design			Planning and design			
Place all pylons further than 50m from the centreline of all proclaimed provincial roads.			Planning and design			

Impact management outcome: Improve intersection safety						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Consult the local road authorities, regarding the upgrading of several intersections on the public road network			Planning and design			
The various intersections will need to be accessed and upgraded by the developer to accommodate the expected transportation requirements. This upgrade would need to be implemented to facilitate the delivery of loads to the site.			Planning and design			

Construction

Impact management outcome: Prevent road incidents						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Post relevant road signage along affected routes			Construction			
Temporary signs warning motorists of construction vehicles should be erected on the approaches to the access roads			Construction			
Reduce speed at intersections and use appropriate traffic warning signs			Construction			
Identify alternative routes where possible			Construction			
Create a local WhatsApp Group, notifying users of expected deliveries and proposing alternative routes			Construction			
Request the assistance of local law enforcement			Construction			
Ensure all vehicles are roadworthy, visible, properly marked, and operated by an appropriately licenced operator.			Construction			
Provide drivers with advanced driver training			Construction			
The developer shall ensure that the contractor provides the necessary driver training to key personnel, to minimise the potential of incidents on the public road network			Construction			
Make drivers aware of the extremely treacherous conditions through the passes on both the TR 05801 and the			Construction			

DR02311.									
The developer shall implement the necessary steps to protect the pedestrians and livestock on the roads, specifically where the roads pass through farming homesteads, as these are a serious safety concern.					Construction				
Consult SANRAL before any movement of abnormal loads on national roads. In such instances, please forward the Transport Traffic Plan to Garth Julius at juliusg@nra.co.za for approval					Construction				

Impact management outcome: Prevent road incidents and nuisance by managing dust generation									
Impact Management Actions	Implementation			Monitoring			Evidence of compliance		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency				
Reduce travel speed on the gravel road to reduce dust			Construction						
Use dust suppression on gravel roads if required			Construction						
Regular preventative maintenance of roads should be conducted over weekends to minimise the impact on the normal construction period			Construction						

Impact management outcome: Prevent and address road degradation									
Impact Management Actions	Implementation			Monitoring					
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency				

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Create a local WhatsApp Group and post notices of road conditions and propose alternatives.			Construction			
The developer shall contribute to the maintenance of the road network, affected by the development, during the construction and operational phases of the development			Construction			
A photographic record of the road condition should be maintained throughout the various phases of the development. This provides an objective assessment and mitigates any subjective views from road users.			Construction			
Upgrade unpaved roads to a suitable condition for proposed construction vehicles.			Construction			
Ensure that the roads are left in the same or better condition, post-construction.			Construction			

Impact management outcome: Maintain public road access						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<u>Retain public access to the following public Provincial Roads:</u> <ul style="list-style-type: none"> • <u>Trunk Road 16 section 8 (TR01608; R63)</u> • <u>Divisional Road 2317 (DR02317)</u> • <u>Divisional Road 2405 (DR02405)</u> • <u>Minor Road 8881 (OP08881)</u> • <u>Minor Road 9225 (OP09225)</u> 			Construction			

Operations

Impact management outcome: Maintain adequate public access to public roads						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<u>Provide a geotechnical and geometric design report, including improvement proposals to the WCG Roads Planning Branch prior to any major upgrade or decommissioning</u>			Construction			

Impact management outcome: Prevent delays to other road users						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Construct temporary structures on either side of the road to support the transmission lines over the public road thus mitigating road closure			Construction			

Socio-economic

Planning and Design

Impact management outcome: Enhance local employment and procurement						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Involve the Ubuntu and BWLM LED Units and the PKSDM and CKDM from the early processes (from financial close already if possible). Determine their existing processes with regards to a labour desk and streamline the employment process between the various stakeholders.			Planning and design			
Involve the Municipal structures from the onset of the projects.			Planning and design			
Hold preliminary discussions and draw up a MoU so that roles and responsibilities are clear.			Planning and design			

Impact management outcome: Promote good communication with local community						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Employ a Community Employer Relations Officer / Community Liaison Officer (CLO). Communication with communities should only take place through this one			Planning and design			

channel to ensure transparency, limit unrealistic expectations and to avoid conflict.								
Be vigilant not to raise unrealistic expectations amongst the local communities and workers with regards to employment, skills requirements, local procurement and so forth.				Planning and design				
Consult with landowners to ensure that the R100 000 per annum committed towards security measures are effectively implemented.				Planning and design				

Impact management outcome: Include previously disadvantaged individuals in the project processes.								
Impact Management Actions	Implementation				Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance		
Formulate an Employment Equity Plan prior to construction commencing and include targets for the employment of PDI's, women, Youth and the disabled			Planning and design					

Impact management outcome: Prepare for risks								
Impact Management Actions	Implementation				Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance		
Develop a Fire / Emergency Management Plan in conjunction with affected and neighbouring landowners.			Planning and design					

Impact management outcome: Limit impacts on land values, sense of place and tourism						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Avoid the powerline alignment closer than 1 km from any sensitive receptors.			Planning and design			
Implement a buffer of at least 1 km or more between the powerline and accommodation establishments.			Planning and design			
Erect the powerline where visual intrusion for sensitive receptors are the least.			Planning and design			
In the eastern section of the powerline, place the infrastructure as far as possible within existing Eskom electricity servitudes.			Planning and design			
Implement the VIA mitigation and avoid no-go areas.			Planning and design			

Impact management outcome: Obtain approvals from Transnet Freight Rail						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Submit a formal application to Transnet Freight Rail for a wayleave agreement once the final overhead line has been confirmed, and prior to any work being undertaken. The plan must include detailed plans of the crossings, listing the WG co-ordinates, and must include any services (if any) that will be crossing the Transnet owned land or infrastructure.			Planning and design			

Construction

Impact management outcome: Enhance local employment and procurement						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Emphasis is placed on employment of locals and local supporting industries (SMME's, etc.) from the Project's direct sending area			Construction			
Employment of locals from the study area as far as possible.			Construction			
Clearly identify the beneficiary communities / labour sending area. Give preference to locals that originate from the towns closest to the construction site, and expand the labour sending area progressively.			Construction			
Maximise local content through the Preferential Procurement Plan and Contractor Services Management Plan (CSMP) for all contractors that are used			Construction			
Hold contractors accountable through their CSMP's to employ a local labour force through the labour desk, provide a transport and housing plan, etc.			Construction			
Maximise the local content of procurement in consultation with the local authorities			Construction			

Impact management outcome: Develop the skills of the workforce						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Provide on-the-job training to lower skilled workers.			Construction			
Make the skill requirements clear to the municipalities in advance and do a skills analysis of the available labour force.			Construction			
Require larger contractors to work with small SMMEs to train and transfer skills and include this in their respective CSMP.			Construction			
Capacitate the local relevant local government structures by involving them as early as possible in the project; remain transparent throughout the processes.			Construction			

Impact management outcome: Maintain good communication with communities						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Work through limited communication channels (e.g. Ward Councillors and the Employer Relations Officer / CLO).			Construction			
Keep open communication channels with the landowners and address any potential issues as a matter of priority.			Construction			

Be vigilant not to raise unrealistic expectations amongst the local communities and workers with regards to employment, skills requirements, local procurement and so forth.				Construction			
If feasible, join the local community policing forum or similar initiative for the duration of construction.				Construction			
Where required, draw up a land use management plan with individual landowners to protect livestock and farmland, which addresses restricted access areas, procedures when farm gates are opened and closed and so forth.				Construction			
Keep the local SAPS, other emergency services, ward Councillors, landowners and other relevant stakeholders informed about the construction progress and time-lines.				Construction			
Make contact details of the main contractor and procedures to lodge complaints available to the local communities.				Construction			

Impact management outcome: Respond to complaints							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Make a complaints register / log book available at the entrance to the construction site and act immediately should issues arise.			Construction				

Impact management outcome: Discourage unauthorised site access							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	

No recruitment of temporary workers at the access to the construction sites.				Construction			
24-hour security, where possible demarcate and fence the construction site to prevent trespassing of livestock and people, material stores to be secured, access control and no trespassing of workers outside designated construction areas.				Construction			

Impact management outcome: Prevent anti-social behaviour in local communities							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Contractors to provide a transport and housing plan: (i) no workers are allowed to be housed on site or in informal housing / settlements; (ii) include arrangements that enable workers from outside the area to return home over weekends or at regular intervals.			Construction				
It is also recommended that the Developer embarks on a Social Awareness Campaign for the workforce that focuses on sexual health, unwanted pregnancies and related social issues.			Construction				

Impact management outcome: Promote community and employee safety							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	

Display "danger" warning signs and "no public access" signs at all potential accesses, paths and along the periphery of the construction areas in English and the local languages.				Construction			
Ensure implementation of the provisions of the Occupational Health and Safety Act No. 85 of 1993 and adhere to the Emergency and Safety plan procedures for the duration of the construction phase.				Construction			

Impact management outcome: Restore agricultural potential							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Rehabilitate the veld to its original state post construction.			Construction				

Operations

Impact management outcome: Limit impacts on land values, sense of place and tourism							
Impact Management Actions	Implementation			Monitoring			
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance	
Maintain the servitude / access track for the duration of the project.			Operations				

Waste Management

Planning and Design

Impact management outcome: Waste minimisation and management						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The applicant must access the DEA&DP's Guideline on The Management of Construction and Demolition Waste, and consider for waste management during construction phase.			Planning and design			

Construction

Impact management outcome: Minimise waste generation and manage waste						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The ECO or contractor must implement waste awareness training to all staff, contractors and visitors that addresses proper waste management and waste separation. The training must be part of worker induction where all aspects of the EMPr are explained.			Construction – before site clearance takes place			
The central waste collection area must be clearly demarcated as a waste collection site, with appropriate waste separation bins that are clearly marked according to			Construction			

the type of waste to be stored.									
There must be visible signage to prevent any littering and illegal dumping from occurring.						Construction			
Construction rubble must be re-used on site where feasible. Remaining rubble must be removed to an appropriate disposal or beneficiation site.						Construction			
Cleared vegetation must be separated and sent to the nearest composting facility.						Construction			

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

APPENDIX 2: CHANCE FOSSIL FINDS PROCEDURE

APPENDIX 2 - CHANCE FOSSIL FINDS PROCEDURE: Gamma Gridline and associated grid connection infrastructure between Loxton and Victoria West	
Province & region:	Northern Cape (Pixley Ka-Seme District) and Western Cape (Central Karoo District)
Responsible Heritage Management Agencies	SAHRA for N. Cape: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za HERITAGE WESTERN CAPE for W. Cape. Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 9598. E-mail: ceoheritage@westerncape.gov.za
Rock unit(s)	Teekloof Formation (Lower Beaufort Group), Late Caenozoic alluvium.
Potential fossils	Fossil skulls, postcrania of tetrapods, amphibians, fish as well as rare petrified wood, vertebrate and invertebrate burrows within bedrocks. Mammalian bones, teeth & horn cores, freshwater molluscs, calcretised trace fossils & rhizoliths and plant material in alluvium.
ECO / ESO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary.
	2. Record key data while fossil remains are still <i>in situ</i> : <ul style="list-style-type: none"> • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo • Context – describe position of fossils within stratigraphy (rock layering), depth below surface • Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (e.g. rock layering)
	3. If feasible to leave fossils <i>in situ</i> : <ul style="list-style-type: none"> • Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation • Ensure fossil site remains safeguarded until clearance
	3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only): <ul style="list-style-type: none"> • <i>Carefully</i> remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock) • Photograph fossils against a plain, level background, with scale • Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags • Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist

	<p>is given by the Heritage Resources Agency for work to resume</p>	<ul style="list-style-type: none"> Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
	<p>4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</p>	
	<p>5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency</p>	
<p>Specialist palaeontologist</p>	<p>Apply for Fossil Collection Permit Record / submit Work Plan to relevant Heritage Resources Agency. Describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Agency. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.</p>	

APPENDIX 3: ALIEN PLANT MANAGEMENT PLAN

Gamma Gridline
Alien Plant Species Management Plan
April 2023

PURPOSE

The purpose of the Gamma Gridline Alien Plant Management Plan is to provide a framework for the management of alien and invasive plant species during the construction and operation of the powerline. The broad objectives of the plan include the following:

- Ensure alien plants do not become dominant in parts or the grid route through the control and management of alien and invasive species presence, dispersal & encroachment.
- Initiate and implement a monitoring and eradication programme for alien and invasive species.
- Promote the natural recovery and re-establishment of indigenous species where possible in order to retard erosion and alien plant invasion.

PROBLEM BACKGROUND & LEGISLATIVE CONTEXT

Alien plants require management because they replace indigenous vegetation leading to loss of biodiversity and change in landscape function. Potential consequences include loss of biodiversity, loss of grazing resources, increased fire risk, increased erosion, loss of wetland function, impacts on drainage lines, increased water use etc. In recognition of these impacts, South Africa has legislation in place which requires landowners to clear or prevent the spread of certain declared weeds from their properties.

NEMBA provides the invasive status classification, as outlined in the Alien and Invasive Regulations and Species list (2014), for all identified alien invasive plant species. These plants can be classified as Category 1a, 1b, 2 or 3 species. The description of the abovementioned classifications are:

Category 1a plants

Category 1a Listed Invasive Species are those species listed in terms of section 70(1)(a) of NEMBA as species which must be combatted or eradicated.

A person in control of a Category 1a Listed Invasive Species must-

- Comply with the provisions of section 73(2) of NEMBA;
- Immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of NEMBA; and
- allow an authorised official from the Department to enter onto land to monitor.

Category 1b plants

Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of NEMBA as species which must be controlled.

A person in control of a Category 1 b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of the Act:

- If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must control the listed invasive species in accordance with such programme.
- A person must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act.

Category 2 plants

Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of NEMBA as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.

- Unless otherwise indicated in the Notice, no person may carry out a restricted activity in respect of a Category 2 Listed Invasive Species without a permit.
- A landowner on whose land a Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit.
- If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must control the listed invasive species in accordance with such programme.
- Unless otherwise specified in the Notice, any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area, must, for purposes of these regulations, be considered to be a Category 1 b Listed Invasive Species and must be managed according to Regulation 3 of NEMBA.
- Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in Government Gazette No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.

Category 3 plants

Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

- Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3 of NEMBA.

- If an Invasive Species Management Programme has been developed in terms of section 75(4) of NEMBA, a person must control the listed invasive species in accordance with such programme.

ECOLOGICAL CONTEXT

Alien species are adept at taking advantage of disturbance and many of their traits are linked to this ability. This usually includes the ability to produce large amounts of seed or being flexible in terms of their size, growth form or reproductive strategy. Alien plant control strategies therefore need to focus on these key attributes while management practices need to ensure that they do not create circumstances under which alien species are encouraged or can thrive. Perhaps the most important aspects in this regard are minimizing disturbance and ensuring the retention and recovery of indigenous vegetation as far as possible.

While the grid corridor is currently largely free of alien species it is not possible or practical to prevent alien species from establishing in disturbed areas along the grid route as seed or through spreading into disturbed areas from existing localized infestations. As such, some alien infestation is almost certain to occur, at least in some places and by some species. The disturbance created during construction will render the such areas vulnerable to invasion for some time thereafter and it is likely that many alien species from the local species pool will invade the disturbed areas during or immediately after construction.

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 invasion risk and severity. Wherever possible, the indigenous vegetation should be left intact as this will significantly reduce the likelihood of alien invasion as well as other degradation problems such as erosion.

Certain habitats and environments are more vulnerable to alien plant invasion and are likely to bear the brunt of alien plant invasion problems at the site. In addition, construction activities and changes in water distribution at the site following construction are also likely to increase and alter the vulnerability of some parts of the site to alien plant invasion. Areas at the site which are likely to require specific attention include the following:

- Wetlands, drainage lines and other mesic areas;
- Cleared and disturbed areas such as access roads, areas of cut and fill along roads, construction footprints etc.;
- Construction camps and lay-down areas which are cleared or are active for an extended period; and
- Areas which receive runoff from roads and other hardened areas.

General Clearing and Guidance Principles

- Alien control programs are long-term management projects and should include a clearing plan which includes follow up actions for rehabilitation of cleared areas. Alien problems at the site should be identified during pre-construction surveys of the development footprint. This may occur simultaneously to other required searches and surveys. The clearing plan should then form part of the pre-construction reporting requirements for the site.
- The plan should include a map showing the alien density & indicating dominant alien species in each area.
- 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 do 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.

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 Working for Water Website. <http://www.dwaf.gov.za/wfw/Control/>

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 re-sprout. 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.

ALIEN MANAGEMENT ACTIONS & ACTIVITIES

In order to maintain the site free of alien weeds and trees, the following plan should be implemented during construction and operation.

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.

Construction Phase Actions/Activities	Frequency
The ECO is to provide permission prior to any vegetation being cleared for development.	Daily
Clearing of vegetation should be undertaken in stages or sections 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.	Monthly
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 32 m of any wetland, 80 m of any wooded area, within 1:100 year floodlines, in conservation servitude areas or	Weekly

on slopes steeper than 1:3, unless permission is granted by the EO for specifically allowed construction activities in these areas. The work area should be clearly marked with construction or similar tape to demarcate the area to which vegetation disturbance and construction activity is to be confined.	
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. The alien plant removal and control methods used should adhere to best-practice for the species involved. Such information can be obtained from the Working for Water website.	Monthly
Pesticides may not be used. Herbicides may be used to control listed alien weeds and invaders only	Monthly
Clearing activities must be contained within the affected zones and may not spill over into demarcated No Go areas. Wetlands and other sensitive areas should remain demarcated with appropriate fencing or hazard tape and signage indicating their no-go status posted. These areas are no-go areas (this must be explained to all workers) that must be excluded from all development activities.	Daily

Monitoring Actions - Construction Phase

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

Monitoring Action	Indicator	Frequency/Period
Document alien species present at the site	List of alien plant species	Pre-construction
Document alien plant distribution	Alien plant distribution map	Bi-annually
Document & record alien control measures implemented	Record of clearing activities	Bi-annually
Review & evaluation of	Decline in documented	Bi-annually

control success rate	alien abundance over time	
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Operational Phase Activities

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

Operational Phase Action/Activity	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

Monitoring Actions - Operational Phase

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

Monitoring Action	Indicator	Frequency/Period
Document alien plant distribution and abundance	Alien plant distribution map	Annually
Document & record alien control measures implemented	Records of control measures and their success rate. A decline in alien distribution and cover	Annually

	over time at the site	
Document rehabilitation measures implemented and success achieved in problem areas	Decline in vulnerable bare areas over time	Annually

Appendix 1. Recommended Alien Plant Clearing & Control Protocols

- a) The appropriate alien management strategy pertinent to the situation/environment should be identified and implemented.
- b) The Alien Plant Management Plan for alien vegetation includes three phases:
 - I. **Initial control:** drastic reduction of the existing population;
 - II. **Follow-up control:** reduction of seedlings, root suckers and coppice growth;
 - III. **Maintenance control:** sustain low alien plant numbers/density with low annual costs. At this phase, alien plants must no longer be considered a problem. Monitor the situation two-three times each year (spring, mid-summer and autumn) to avoid alien plant re-infestation, spread and densification, and thereby avoid increased control costs.

Initial Control

1. Fell trees - control stumps - plant grass

- a) Fell trees, treat stumps, remove wood and if necessary, rehabilitate. This strategy is suitable where infestations are easily accessible and can be harvested (i.e. for firewood, charcoal, building materials, mulch production). It is also suitable for trees that need removal for utility or aesthetic purposes or where they pose a potential hazard to waterways, building structures, etc.
- b) **Control Method for trees:** Use chainsaws, bow-saws, brush cutters or cane knives to fell trees and saplings. Stump height should be less than 15 cm. Apply a registered herbicide mix with hand sprayers, paint brushes or knapsack sprayers at low pressure, using solid cone nozzles. Use a suitable dye to ensure that stumps are not missed.
 - I. **Cut stump treatment:** Apply the recommended herbicide mixed in water to the cut surface of stumps. Do NOT spray the sides of stumps. Apply herbicide mix up to one hour after felling or the cut wood will seal.
 - II. **Total Stump treatment:** Apply the recommended herbicide mixed in diesel to the cut surface, down the sides of stumps and to any exposed roots. The herbicide mix can be applied even several days after felling. Ensure herbicide can be mixed with diesel.
 - III. **Stump treatment with herbicide plugs:** After felling, make holes in the stumps and insert plugs containing the herbicide, which is released into the stumps.
- c) **Control method for seedlings, saplings and coppice:** In a mixed age stand, where there are young plants and coppice growth, cut the plants with a brush cutter and treat the stumps. Hand pull seedlings. Do not spray foliage as many plants may be

damaged during felling and may not absorb enough of the herbicide for effective control. Untreated plants can be controlled with foliar herbicide during follow-up work.

- d) Disposal of brushwood: Where wild fires are a potential hazard, spread out the brushwood evenly over a large area. Avoid large heaps as this is a fire hazard and burning will cause breakdown of the soil structure. Trees that cannot be utilised should be controlled standing to avoid burning large amounts of wood lying on the soil surface.
- e) Rehabilitation: Sow grass and/or shrubs in the bare soil around the stumps immediately after the first reliable rains. Spread brushwood over the buried seed to aid seedling establishment. Brushwood can be used as fences/barriers and pegged to stabilise slopes where necessary.

a) **Control for shrubs** Alien shrubs less than 1 m tall

- I. Foliar application of a registered herbicide is required.
- II. When dense seedling growth of uniform height is present use knapsack sprayers with flat fan nozzles.
- III. Use solid cone nozzles for seedlings of uneven height, coppice growth, root suckers and short saplings.
- IV. Rehabilitate cleared areas with locally-occurring species if necessary.

b) **Alien shrubs taller than 1 m**

- I. **Mechanical Control pre-treatment**: Where shrubs are taller than 1.5 m, the height must be reduced by cutting, using sharpened hoes, cane knives or motorised brush cutters. For large areas of dense growth, use a tractor-mounted gyro-mower (set as low as possible) after slashing or cutting plants, either treat the freshly cut stumps or allow re-growth to knee height and then spray with a suitable registered herbicide.
- I. **Cutting for stump treatment**: This is suitable for low - medium density infestations but is usually not practical for high density infestations. Slash plants below 15 cm in height for stump application. Control the stumps immediately after cutting the plants. Stump application is best during the active growing season.
- II. **Cutting from coppice treatment**: This is suitable for medium - high density infestations. Slash plants at a convenient height (e.g. knee height for foliar application to coppice re-growth. Cutting dense plants is good winter work but is tiring so must be well organised. Spray coppice re-growth during the active growing season, when there is enough leaf cover to absorb the herbicide.
- III. **Flattening**: Roll empty 200L metal drums or place large pieces of corrugated iron

to make paths through dense thickets of plants (e.g. Bramble). This increases access for foliar or stump application.

IV. **Cut pathways:** This increases access for control work.

V. **Mechanical uprooting:** Uprooting of shrubs with mattocks results in soil disturbance, especially where large plants are present in dense thickets. Use only where not susceptible to erosion or where soil can be stabilised effectively.

c) **Disposal of small amounts of cut material:** Small amounts of cut top growth material do not impede access for follow-up control work. Leave the material to act as a mulch and to decompose, or spread over planted grass seed to aid seedling establishment. This adds organic material to the soil.

d) **Disposal of large amounts of cut material:** Cut the plants and use long poles/branches to roll the material away from stumps. Where cut material hampers access for follow-up control, roll into heaps and burn. Alternatively, spread large amounts of cut material over a large area for a cool burn. This avoids hot intense fires that would destroy the soil surface. Burn during the wet season for a cooler burn.

Rehabilitation: Avoid sowing on compacted soil or soil with a 'crust' as the seed will be washed away after the first rains. In such cases light soil disturbance is necessary e.g. using rakes for broadcast sowing or sharp-pointed hoes for row sowing. Sow suitable grass species on bare soil. Cover the buried seed with small amounts of cut top growth material to aid grass establishment. The material retains moisture in the soil, traps soil after heavy rains, and by rotting contributes organic material to the soil to aid seedling establishment.

1 Chemical control of alien herbs:

- a) There are many herbaceous alien (soft/non-woody) species present and likely to occur sporadically throughout the operational phase of the development.
- b) Alien herbs are called *broadleaf weeds* and some have pre- and post-emergent herbicides registered for their control.
- c) However, where alien herbs are associated with woody alien plants, herbicides registered for control of woody aliens are often also used for control of broadleaf weeds.
- d) Alternatively, glyphosate is used, as this is often registered for both woody and non-woody species. Glyphosate is a post-emergent (foliar applied) herbicide that is inactivated by soil.

Rehabilitation: Alien herbs usually occur in disturbed areas, where rehabilitation is not generally a high priority. However, in some situations, rehabilitation with grass or shrubs is required for control of alien herbs. However, only indigenous grasses and/or shrubs growing in the study area should be used for such rehabilitation.

Perennial grasses are often planted after a disturbance to stabilise the soil and suppress

alien herbs. Alternatively creeping species (such as *Cynodon dactylon*) that have good soil binding ability to prevent erosion. Planting a quick-growing grass on bare soil results in a dense rapid cover that successfully competes with establishing alien herbs.

Follow-up control

Follow up control of alien seedlings, saplings and coppice re-growth is essential to achieve and sustain the progress made with initial control work. If this phase is neglected, the cleared area will soon become infested with dense alien vegetation again, arising either from re-invasion by the original species or from invasion/encroachment by another species. Follow-up control is essential to prevent alien seedlings suppressing planted or colonizing grasses. Before starting initial control operations in new infestations, all required follow-up control and rehabilitation work must be completed or in progress in areas initially prioritised for clearing and rehabilitation.

Follow-up control should combine the following methods:

- a) Chemical control methods (always use registered herbicides);
- b) Mechanical control methods, and
- c) Available biological control agents

Evaluate and select methods for follow-up control work according to species, and the type and density of re-growth.

2. Control methods for dense re-growth

Dense re-growth may arise after initial control operations, as seedlings, root suckers or stump coppices. For example, wattle seedlings are stimulated to germinate after fire or seedlings may arise from a high seed bank in the soil.

- a) Do not uproot or hoe out dense seedlings. This would result in soil disturbance that promotes germination and flushes of alien seed growth.
- b) Do not cut plants to control stumps where stump density is high. Stump application would be impractical with many untreated stumps.
- c) Instead cut tall dense re-growth with brush cutters or bush knives. Remove top growth to allow access for foliar spray of coppice re-growth.

3. Control methods for low-medium density re-growth

Areas with low-medium density re-growth are considered high priority for control as neglect of these areas will result in densification and spread that is more costly to control. Large areas of low-density growth can be controlled rapidly

- a) **Cut plants and control the stumps:** Stump height should be less than 15 cm. Use a

recommended registered herbicide. Apply the herbicide mix with hand sprayers, paint brushes or knapsack sprayers at low pressure, using solid cone nozzles. Use a suitable dye to ensure no stumps are missed. For cut stump treatment, apply the herbicide mixed in water to the cut surface of stumps. Do NOT spray the sides of the stumps. Apply the herbicide within 1 hour of cutting the plants before the wound seals. For total stump treatment, apply a herbicide mixed with diesel to the cut surface, down the sides of stumps and to exposed roots. The herbicide mix can be applied up to several days after cutting the plants.

b) Foliar spray on coppice re-growth and saplings: Re-growth can be sprayed up to a height of 1 m. Apply the herbicide in knapsack sprayers using solid cone nozzles with a suitable dye to avoid over- or under-spraying.

c) Mechanical control options:

- I. Hand pull seedlings when the soil is wet, using gloves to protect the hands.

Maintenance Control

Aim to keep the area stabilised by maintaining a good grass or shrub cover. Prevent further soil disturbance. Annual inspection of vegetation cover and alien plant re-growth is essential. Follow-up and maintenance control work each year will protect the planted plant cover. If this is neglected, the rehabilitated area will revert to dense patches of alien plants, resulting in increased control costs and loss of indigenous cover.

Integrated Control

Areas should be ranked into high, medium and low priority work areas, where high priority areas would be controlled first.

1. High Priority Areas for control

a) Low density infestations

- I. Start maintenance control in areas with low alien plant numbers, targeting especially mature seed-producing trees (identifiable by the presence of flowers during the flowering season and/or presence of seed), or parent trees that are a source of seed to the site. This may include trees outside of the site, within a minimum of 100 m from the site boundary.
- II. Maintenance control is rapid and cost effective.
- III. This will protect the natural vegetation that is already there, prevent formation of thickets, and halt encroachment (spread) of alien plants into surrounding areas.

b) Areas near the top of slopes, water courses, steep bare slopes or long bare slopes

- I. Start control at the top end of water courses or at the top of slopes.

- II. This prevents seed spreading downstream or downhill to infest new areas.
- III. Plant grasses and/or shrubs on bare soil, especially on steep slopes or long bare slopes, to prevent erosion.

c) Areas where initial control work is completed and re-growth is present

- I. Complete major follow-up control and rehabilitation work in all areas before starting initial control in new infestations.
- II. Control of seedlings protects newly planted vegetation.
- III. Failure to control re-growth results in densification and spread of infestations, with increased control and loss of vegetation cover.
- IV. Continued maintenance is a long-term on-going exercise to prevent re-infestation.

d) Newly disturbed areas

- I. Areas where mechanical disturbance (such as removal of alien plants) or loss of vegetation cover has occurred provides an ideal seed bed for pioneer alien plant seedling establishment.
- II. This re-growth should be controlled while still less than 0.5 m tall.
- III. If this is neglected, re-growth will become taller and more dense, resulting in more costly control work and loss of vegetation cover.

e) Edges of dense spreading infestations

- I. Confine infestations when there are insufficient funds to control the whole infestation and where the alien plants are likely to spread and invade neighbouring areas.
- II. To prevent spread, control trees, saplings, seedlings, coppice re-growth or shrubs in a 5 - 10 m wide strip around the edges of such infestations to confine them.
- III. Move inwards from the edges with control work as funds become available.

f) Low density areas inside dense infestations

- I. Thin inside infestations to prevent densification (i.e. control all low-density areas inside the infestations to encourage grass growth. This will break up the large infestations into several smaller infestations that are more easily controlled.
- II. Natural vegetation will gradually spread into the controlled areas as the alien plants die or are removed. The direction of grass spread therefore follows the control work, as the alien plants die. Sow seed in bare soil for a more rapid ground cover, especially on steep slopes or on easily eroded soil.
- III. Monitor confined and thinned infestations 2 - 3 times each year. Repeat follow-up control operations as required, to ensure the controlled areas remain clear of re-growth and that the planted vegetation has established and remains healthy. Seedling re-growth will be evident in spring and early summer while re-growth and

coppice will be easily observed in summer. When a re-infestation is observed it should be controlled immediately.

4. Low priority areas for control

- a) Stabilised areas where there is a healthy dense vegetation cover, and any alien plants are very sparse, difficult to detect and with little or no impact at present. Monitor alien plant growth and grass cover 2-3 times a year to ensure timely maintenance work.
- b) Areas where dense infestation could become worse. Confine these dense infestations to prevent spread into new areas.
- c) Areas where alien plants have little or no impact.

Thus, **high priority** areas are identified where resources should be concentrated to achieve the desired aims. Control in these areas gives the greatest total benefit, and allows the best use of the limited available resources.

The **low priority** areas would consume resources with little benefit, and should therefore be ignored or re-evaluated each year for attention at a later date.