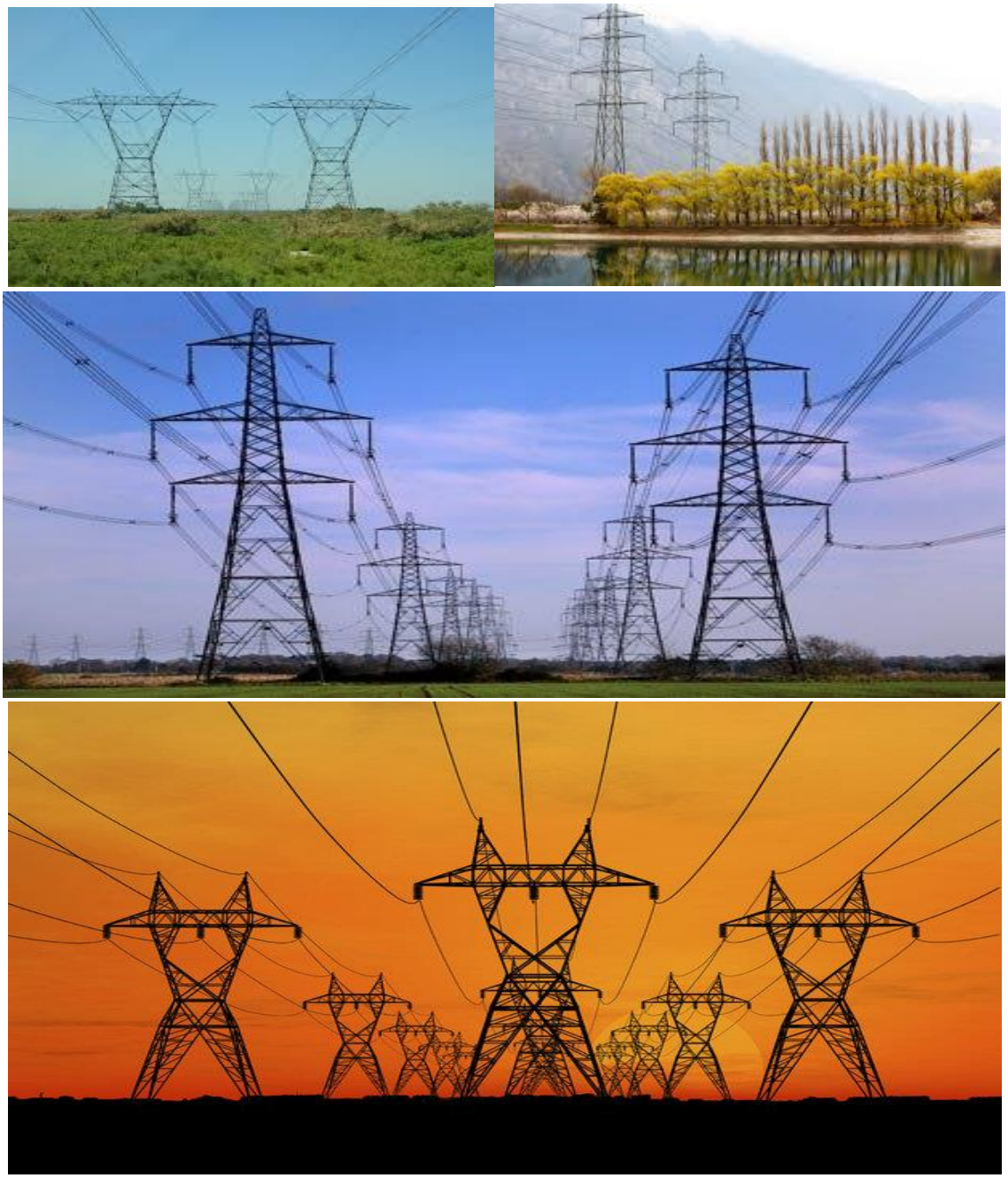
APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE



environmental affairs
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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	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. 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. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. 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. 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.
	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 Part B: Section 1, and understands that the impact management outcomes and impact management actions are

Part	Section	Heading	Content
			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 Part C. 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 Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C 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. This section applies only **to additional** impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or

Part	Section	Heading	Content
			expansion and which are not already included in Part B: section 1.
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)	Role 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. Responsibilities - 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)	Role

Responsible Person (s)	Role and Responsibilities
	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. <u>Responsibilities</u> - 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)	<u>Role</u> The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non- compliance with the Performance Specifications as set out in the EA and EMPr. 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.

Responsible Person (s)	Role and Responsibilities
	<u>Responsibilities</u> The responsibilities of the ECO will include the following: - 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;

Responsible Person (s)	Role and Responsibilities
	- Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer (dEO)	Role 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. Responsibilities - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	Role 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

Responsible Person (s)	Role and Responsibilities
	EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities. Responsibilities - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	Role 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: Responsibilities - 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;

Responsible Person (s)	Role and Responsibilities
	- Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all 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 contactor 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 understand the individual responsibilities in terms of this EMPr.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All staff must receive environmental awareness training prior to commencement of the activities	ECO / cEO / dEO	Environmental awareness training workshops	Construction	ECO / dEO	Monthly and as and when required	Attendance register
The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course;	Contractor	Scheduling of sufficient sessions through consultation with the ECO / cEO / dEO	Construction	ECO / dEO	Monthly and as and when required	Attendance register
Refresher environmental awareness training is available as and when required;	ECO / cEO / dEO	Refresher environmental awareness training workshops	Construction	ECO / dEO	Monthly and as and when required	Attendance register
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;	ECO / cEO / dEO	Ensure that the EA and EMPr is readily available	Construction	ECO / dEO	Monthly and as and when required	Attendance register
The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a	Contractor	Place appropriate posters at key locations	Construction	ECO / dEO	Monthly and as and when required	Photographic record

minimum: a) Safety notifications; and b) No littering						
Environmental awareness training must include as a minimum the following: a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response procedures; d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention.	ECO / cEO / dEO	Environmental awareness training material	Construction	ECO / dEO	Monthly and as and when required	Environmental awareness training material requirements checklist
A record of all environmental awareness training courses undertaken as part of the EMPr must be available;	ECO / cEO / dEO	Filing system including all proof of training	Construction	ECO / dEO	Monthly and as and when required	File with proof of training

Educate workers on the dangers of open and/or unattended fires;	ECO / cEO / dEO	Environmental awareness training material	Construction	ECO / dEO	Monthly and as and when required	Environmental awareness training material requirements checklist
A staff attendance register of all staff to have received environmental awareness training must be available.	ECO / cEO / dEO	Filing system including all proof of training	Construction	ECO / dEO	Monthly and as and when required	File with proof of training
Course material must be available and presented in appropriate languages that all staff can understand	ECO / cEO / dEO	Environmental awareness training material in the required languages	Construction	ECO / dEO	Monthly and as and when required	File with proof of training in appropriate languages

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
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	Contractor & cEO	Development a method statement	Pre-Construction	ECO dEO	Once, prior to construction	Method statement which complies with the minimum requirements listed

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 construction 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;	DPM, Contractor & cEO	Place construction camps outside of sensitive areas	Pre-Construction	ECO dEO	Once, prior to construction	Layout and sensitivity map indicating avoidance of sensitive areas
Sites must be located where possible on previously disturbed areas	DPM	Place sites within previously disturbed areas where possible	Pre-Construction	ECO dEO	Once, prior to construction	Layout and sensitivity map indicating avoidance of sensitive areas
The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and	DPM	Fencing as per the requirements of Section 5.5 of this EMPr	Pre-Construction	ECO dEO	Once, prior to construction	Camp is fenced in accordance with Section 5.5 of this EMPr
The use of existing accommodation for contractor staff, where possible, is encouraged.	Not applicable – the development of new accommodation is not proposed.					

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
Identification of access restricted areas is to be informed by the environmental assessment, site walk through, and any additional areas identified during development;	ECO / cEO / dEO	Demarcate access restricted areas	Commencement and for the duration of the construction phase	ECO	Continuous	Photographic evidence
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	ECO / cEO / dEO	Erect appropriate temporary barriers around access restricted areas	Commencement and for the duration of the construction phase	ECO	Continuous	Photographic evidence
Unauthorised access and development related activity inside access restricted areas is prohibited	ECO / cEO / dEO	Erect appropriate temporary barriers around access restricted areas	Commencement and for the duration of the construction phase	ECO	Continuous	Photographic evidence

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
Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within	DPM	Negotiations for access to the servitude and tower positions with landowners	Pre-construction Construction Operation	dEO	Continuous	Written and signed agreements

the assessed and authorised area;		affected by the grid connection corridor				
An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities;	DPM Contractor	Access agreements with the affected landowners.	Pre-construction	dEO /ECO	Once, prior to construction	Written and signed agreements
The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities;	Contractor	Signs to indicate access for the project	Pre-construction	cEO / ECO	Once, prior to construction	Photographic record of signposted access roads
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	Contractor	Undertake maintenance activities on private roads used for construction	Construction	cEO / ECO	Continous	Photographic record of access roads tracking condition
All contractors must be made aware of all the access routes.	Contractor	Provide a map showing all access routes associated with the project	Pre-construction Construction Operation	ECO	Construction	Access routes map available
Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;	Contractor	All access routes developed that are not in-line with the access route agreements must be closed and re-habilitated	Construction	ECO	Continous	Photographic record of the closure of access roads and re-vegetation

Maximum use of both existing servitudes and existing roads must be made to minimise further disturbance through the development of new roads;	Contractor	Existing access routes to be used must be specified and the development of new roads must be avoided	Pre-construction Construction Operation	cEO / ECO	Continous	Implement approved layout
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;	dEO / cEO	Record the conditions of private roads to be used as per the requirements of section 4.9 and agree on the required condition of the roads with the landowner, DPM and contractor	Construction	ECO	Prior to road use	Photographic recordof the road conditions
Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands;	DPM Contractor	Design access roads to follow fence lines and avoid vegetated areas	Pre-construction	ECO	Once, prior to construction	Implement approved layout
Access roads must only be developed on pre-planned and approved roads.	Contractor	Construction of access roads only on pre-planned and approved roads	Construction	ECO / dEO	Once, prior to construction	Implement approved layout

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

Use existing gates provided to gain access to all parts of the area authorised for development, where possible;	Contractor	Identify and inform all relevant staff of the existing gates to be used	Pre-construction & Construction	dEO	Monthly	Existing gates are utilised on a frequent basis and only limited new access gates are developed
Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record;	ECO	Existing and new gates will be recorded and documented as per the requirements of section 4.9	Construction	ECO	Once, when the construction of all new gates have been completed	Photographic record of the existing and new gates as per the requirements of section4.9
All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner;	Contractor	Ensure all relevant gates are fitted with locks and are always locked	Construction and Operation	ECO	Continuous	All gates are locked
At points where the line crosses an existing 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;	dEO, Contractor & cEO	Install new gates where required with the approval of the affected landowner	Construction	ECO	Once, prior to construction and during the construction phase, as and when required	New gates are installed where the power line crosses fences
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;	Contractor	Install gates in a manner so that there is a gap of no more than 100mm between the bottom of the gate and the ground	Construction	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement

Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate;	Contractor	Implement a reinforced concrete sill beneath gates installed for jackal proofing	Construction	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement
Original tension must be maintained in the fence wires;	Contractor	Maintain original tension of fences through required activities	Construction	ECO	Monthly	No tension reduction on fence wires
All gates installed in electrified fencing must be re-electrified;	Contractor	Electrify gates installed in electrified fencing	Construction	ECO	Once, during the erection of the gates during the construction phase	Gates installed in electrified fencing is electrified
All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities;	Contractor	Undertake maintenance activities on fences and barriers	Construction	ECO	Monthly	Photographic record of fences erected
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;	Contractor	Fence construction camps, batching plants, hazardous storage areas and access restricted areas. Avoid sensitive flora	Construction	ECO	Once during the erection of fencing	Photographic record of fences erected
Any temporary fencing to restrict the movement of livestock must only be erected	dEO/ cEO Contractor	Obtain written approval from the relevant landowner where	Construction	ECO	To be monitored as temporary	Written approval to be provided by the dEO

with the permission of the landowner.		temporary fencing is required to restrict livestock movement			fencing is required	
All fencing must be developed of high quality material bearing the SABS mark;	Contractor	Make use of high quality materials approved by SABS	During the construction phase	cEO	To be monitored as fencing is erected during the construction phase	Use of high quality materials for fencing approved by SABS
The use of razor wire as fencing must be avoided as far as possible;	Contractor	Razor wire must not be sourced or used for the erection of fencing	Construction	ECO	To be monitored as fencing is erected during the construction phase	Fences erected do not make use of razor wire
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;	DSS and Contractor	Ensure fenced areas are locked as required through the implementation of a formalised process. Appoint a security company	Construction	cEO	Weekly and as and when required	Fences are locked and no complaints from landowners are received. A security company is appointed
On completion of the development phase all temporary fences are to be removed;	Contractor	Removal of all temporary fences	Construction	ECO dEO	Once, following the completion of the construction phase	No temporary fences associated with the project is present following the completion of the construction phase

The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.	Contractor	Appropriate removal of all fence uprights	Construction	ECO dEO	Once, following the completion of the construction phase	No fence uprights associated with the project is present following the completion of the construction

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
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;	DPM	According to the Water Use Licence	Construction	ECO	Once off prior to construction	water Use Licence on file
The Contractor must ensure the following: 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.	DPM and Contractor	Method Statements According to the Water Use Licence	Construction and Operation	ECO	Continuous	Method Statements and Water Use Licence on file and Photographic records

Ensure water conservation is being practiced by: 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.	Contractor / dEO /cEO in consultation with the ECO	Implement the required water conservation measures throughout on-site construction processes	During the construction phase	ECO	Monthly, and as and when required	Successful implementation of water conservation

5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by stormwater 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
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;	Contractor	Implement measures for the control and management of runoff	Construction	ECO	Continuous	No mismanagement of runoff or contaminated water due to the temporary concrete batching plant
All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility;	Contractor and cEO	Obtain approved absorbent material and make use of licensed waste disposal facilities for disposal of oil	Construction	ECO	Continuous	Availability of approved absorbent material at the construction site and proof of disposal of oil at licensed disposal facilities

Natural stormwater 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;	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge	Construction	ECO	As and when the need arises to discharge natural stormwater runoff and clean water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.
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.	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge	Construction	ECO	As and when the need arises to discharge water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.

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
All measures regarding waste management must be undertaken using an integrated waste management approach;	Contractor & cEO	Develop and implement a waste management plan	Construction	ECO	Monthly	Implementation of the waste management plan and proof of waste management through proof of responsible disposal
Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided;	Contractor & cEO	Provision of appropriate waste collection bins strategically placed throughout the site	Construction	ECO	Continuous	Appropriate waste collection bins are available throughout the site
A suitably positioned and clearly demarcated waste collection site must be identified and provided;	DPM and Contractor	Identify an appropriate location for the waste collection site which must be clearly demarcated through signage and temporary fencing	Construction	ECO	Once, prior to the commencement t of construction	A waste collection site is appropriately placed and demarcated
The waste collection site must be maintained in a clean and orderly manner;	Contractor & cEO	Regular collection of waste and maintenance of the area must be undertaken as	Construction	ECO	Continous	The waste collection site is maintained and clean

		per the waste requirements for the project during construction				
Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal;	Contractor & cEO	Provide separate and marked bins for the different waste types associated with the construction phase	Construction	cEO	Continous	Separate waste bins are available on site and waste generated is separated into the relevant bins
Staff must be trained in waste segregation;	cEO / dEO in consultation with the ECO	Include waste segregation as part of the environmental awareness training material.	Construction	ECO	Monthly, and as and when required	Environmental awareness training material requirements checklist
Bins must be emptied regularly;	Contractor & cEO	Bins must be emptied before reaching total capacity and on a regular basis as required for the project	Construction	ECO	Monthly	No mismanagement t of bins.
General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company;	Contractor & cEO	Disposal of general waste at licensed waste disposal facilities must be undertaken as per the waste management plan	Construction	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided

Hazardous waste must be disposed of at a registered waste disposal site;	Contractor & cEO	Disposal of hazardous waste at licensed waste disposal facilities must be undertaken as per the waste management plan	Construction	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
Certificates of safe disposal for general, hazardous and recycled waste must be maintained.	Contractor & cEO	Obtain certificates for safe disposal of waste	Construction	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided and filed as part of the filing system

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
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;	Contractor & cEO	Contractor to undertake activities which can cause spills of pollutants outside of watercourses	Construction	ECO	Continous	No incidents reported of spillage of pollutants into watercourses
In the event of a spill, prompt action must be taken to clear the polluted or affected areas;	Contractor and cEO	Develop a management plan or process for implementation	Construction	ECO	Continous	Feedback must be provided by the contractor in terms of how the spill was handled and photographic

		should a spill take place				evidence of the feedback must be provided and kept on record
Where possible, no development equipment must traverse any seasonal or permanent wetland	Contractor and cEO	Develop a Method statement on how to traverse any seasonal or permanent wetland	Construction	ECO	Continous	Feedback must be provided by the contractor in terms of how the spill was handled and photographic evidence of the feedback must be provided and kept on record
No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur;	NA					
Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available;	cEO, Contractor	Ensure that permeant crossings (access roads) are provided for access to the grid connection corridor if no alternative crossing is available.	Construction	ECO	Continous	Ensure that permeant crossings are developed if there is no alternative.
There must not be any impact on the long-term morphological dynamics of watercourses or estuaries;	DPM, cEO	Develop a management plan or process for implementation should a spill take place within a	Construction	ECO, dEO	For all phases of the project life cycle (i.e. construction, operation, decommissioni n g)	No incidents reported of spillage of pollutants into watercourses

		watercourse and ensure continually monitoring				
Existing crossing points must be favoured over the creation of new crossings (including temporary access)	DPM, cEO	Develop a management plan or process for implementation should a spill take place within a watercourse and ensure continually monitoring	Pre-construction and construction	ECO, dEO	During the construction phase of the project.	Existing crossing points utilised as opposed to new ones created and no incidents reported of spillage of pollutants into watercourses
When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: 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	Contractor	Activities undertaken near watercourses must be in-line with and consider the specified environmental controls	Pre-construction and construction	ECO	Monthly, and as and when required	No degradation of the watercourses and no incidents of destruction reported

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.						

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
General						
Indigenous vegetation which does not interfere with the development must be left undisturbed;	cEO and Contractor	Demarcate areas of indigenous vegetation to be avoided before clearance is undertaken	Construction and operation (i.e. for maintenance purposes)	ECO Operation and maintenance team	Weekly, and as and when required	No unnecessary clearance of indigenous vegetation is undertaken
Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species;	Contractor & cEO	Demarcate areas containing protected or endangered species to be avoided by construction activities	Construction	ECO	Weekly, and as and when required	No clearance of protected or endangered species other than those permitted to be removed

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;	Relevant specialist in consultation with the Contractor	Develop and implement a Plant Search and Rescue Plan	Pre-construction & Construction	ECO	Weekly, and as and when required	Implementation of the Plant Search and Rescue Plan and photographic evidence and notes of the implementation of the plan
Permits for removal must be obtained from the Department of Forestry, Fisheries, and the Environment (DFFE) and the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) prior to the cutting or clearing of the affected species, and they must be filed;	DPM & dEO	Undertake the permitting process in order to obtain he relevant permits for the removal of protected species. Permits kept on file	Pre-construction	ECO	Once, prior to he commencement of the construction phase and removal of the protected species	DAFF permits on file
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;	ECO	Ensure that the audit report indicates all species rescued and replanted and provides feedback in terms of compliance with the conditions of permits for replanting	Construction	Not Applicable		
Trees felled due to construction must be documented and form part of the Environmental Audit Report;	ECO	Ensure that the audit report documents the	Construction	Not Applicable		

		details of trees felled				
Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris;	Contractor & cEO	Felled trees, vegetation cuttings and debris must be disposed of at a licensed waste disposal facility	Construction	ECO	Monthly	No felled trees, vegetation cuttings and debris are dumped in inappropriate locations and disposal certificates are available as proof of responsible disposal
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 that is appropriately trained;	DPM, dEO, Contractor & cEO	A suitably qualified pest control operator must be appointed	Construction and Operation	ECO	As and when the use of herbicides is required	Only registered pest control operators must be appointed and proof of their registration must be provided
A daily register must be kept of all relevant details of herbicide usage;	Contractor	Develop a daily register for the documentation of the details of herbicide usage	Construction	ECO	Monthly	Daily register provided by the pest control operator
No herbicides must be used in estuaries;	N/A					
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.	Contractor in consultation with the cEO	Spatially demarcate protected species and sensitive vegetation and implement appropriate fencing where	Construction	ECO	Continuous	Demarcation and fencing is undertaken in- line with the requirements of section 5.3

		required as per section 5.3				
Servitude:						
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;	Contractor in consultation with the DPM	Identify areas of vegetation not to be trimmed.	Construction and Operation	ECO / Operation and maintenance team	Monthly	An indication of the areas where vegetation has not been trimmed or where vegetation has been removed from access roads must be provided.
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 landowner and the EA holder	Contractor & cEO	Clearing for access must be undertaken as per the requirements provided by the landowner and the EA holder	Construction	ECO	Monthly, and as and when required	Proof must be provided that only agreed upon areas have been cleared
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;	Contractor & cEO	Undertake removal of alien invasive vegetation in accordance with the relevant guideline relevant to the project area and ensure the vegetation is disposed of at a licensed waste disposal facility	Construction and Operation	ECO / Operation and maintenance team	Monthly, and as and when required	Proof must be provided that alien invasive vegetation has been cleared in accordance to the relevant guideline and that the vegetation was disposed of at a licensed 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;	Contractor & cEO	Develop a procedure for the trimming of vegetation in terms of the with the listed requirements	Construction and operation	ECO / Operation and maintenance team	Monthly, and as and when required	Proof must be provided that vegetation is trimmed in accordance with the listed requirements
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	Contractor & cEO	Dispose of the debris in accordance with the waste management plan	Construction and operation	ECO / Operation and maintenance team	Monthly, and as and when required	Proof must be provided that the debris has been disposed of at a licensed waste disposal facility
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 that limit impact to the environment must always be considered.	Contractor & cEO	Develop a procedure for the cutting of vegetation or stringing purposes	Pre-construction & Construction	ECO	Once, prior to the commencement of construction	Proof of implementation of the procedure for the cutting of vegetation for stringing purposes
5.11 Protection of fauna						
Impact management outcome: Minimise disturbance to fauna and avifauna.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present;	dEO / cEO / Contractor	Develop a procedure for dealing with livestock within the affected properties	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and as and when required during the construction phase	Written consent provided by the landowner and proof of representation of the landowner during interference
The breeding sites of raptors and other wild bird species must be taken into consideration during the planning of the development programme;	dEO / cEO in consultation with the Contractor	Ensure that the planning and development programme considers breeding sites for wild bird species	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and as and when required	The planning and development programme includes the consideration of breeding sites for wild bird species
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;	dEO / cEO in consultation with the Contractor	Avoid breeding sites and ensure that special care is taken in the presence of nestlings and fledglings	Construction and Operation	ECO / Operation and maintenance team	Weekly, and as an when required during the construction. Monthly, and as and when required during operation	Photographic record of intact breeding sites
Nesting sites on existing parallel lines must documented;	dEO / cEO in consultation with the ECO	Walk-downs of the existing lines located parallel to the project must be undertaken and nests and the details thereof documented	Construction and Operation	ECO / Operation and maintenance team	Quarterly, and as and when required	Details of walk-downs undertaken must be noted and kept on file and photographic records of nesting sites must be kept

Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds;	dEO / cEO in consultation with the Contractor	All mitigation measures recommended by the avifauna specialist must be implemented	Construction and Operation	ECO / Operation and maintenance team	Weekly during construction and monthly during operation	Photographic record of compliance and successful implementation of the recommended measures
Bird guards and diverters must be installed on the new line as per the recommendations of the specialist;	dEO / cEO in consultation with the Contractor	Recommendations made by the specialist for the installation of bird guards and diverters must be adhered to and implemented as appropriate. Bird guards and diverters must be maintained	Construction and Operation	ECO / Operation and maintenance team	Monthly, and as and when required	Photographic record of implementation and maintenance of bird guards and diverters
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;	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must be demarcated as Access Restricted Areas	Construction	ECO	Monthly, and as and when required	No instances of poaching is reported
No deliberate or intentional killing of fauna is allowed;	dEO / cEO in consultation	Implement and maintain snake deterrents on	Construction and Operation	ECO / Operation and	Once, during the construction of	Photographic record of the implementation

	with the Contractor	pylons in areas where snakes are abundant		maintenance team	the pylons and as and when required. Monthly during operation	and maintenance of snake deterrents
In areas where snakes are abundant, snake deterrents are to be deployed on the pylons to prevent snakes climbing up, being electrocuted, and causing power outages; and	dEO / cEO in consultation with the Contractor	Implement and maintain snake deterrents on pylons in areas where snakes are abundant	Construction and Operation	ECO / Operation and maintenance team	Once, during the construction of the pylons and as and when required. Monthly during operation	Photographic record of the implementation and maintenance of snake deterrents
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.	DPM in consultation with the dEO	Undertake a permitting process to obtain the required permits	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Permits for removal and/relocation must be kept on file
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**
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;	DPM and a suitably qualified specialist dEO / cEO in consultation with the	Undertake a Heritage Walk-through Survey Spatially identify and demarcate areas of heritage significance as per the Heritage	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of avoidance of sensitive heritage features through details of avoidance and photographic records

	Contractor and ECO	Impact Assessment and the Heritage Walk-through Report and as per the requirements of section 5.3				
Carry out general monitoring of excavations for potential fossils, artefacts, and material of heritage importance;	Suitably qualified specialist in consultation with the cEO & ECO	Appoint a suitably qualified specialist to carry out the monitoring of excavations for fossils, artefacts and important heritage material	Construction	ECO	During the undertaking of excavations of fossils, artefacts and heritage material	Proof of appointment of a suitably qualified specialist and photographic record of required monitoring by the specialist
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.	dEO / cEO in consultation with the Contractor and ECO	Develop and implement procedures for situations where human remains, archaeological, paleontological or historical material are uncovered	Construction	ECO	Weekly, during the construction phase and as and when required	Proof of work ceased and the required procedures followed in cases where material is discovered.

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**
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.;	cEO in consultation with the Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction Construction	ECO	Once, prior to the commencement of construction and weekly during the construction phase	Compliance with the Emergency Preparedness, Response and Fire Management Plan
All unattended open excavations must be adequately fenced or demarcated;	Contractor & cEO	Ensure that all excavations undertaken is fenced and demarcated within a reasonable timeframe and in instances where excavations will be open for long-periods of time	Construction	ECO	Weekly	Excavations are fenced where required and photographic proof can be provided
Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;	Contractor & cEO	All staff must be easily identifiable and the climbing of towers and scaffolding must be undertaken by authorized personnel as	Construction	ECO	Monthly, and as and when required	No incidents of unauthorised climbing is reported

		managed by the Contractor				
Ensure structures vulnerable to high winds are secured;	Contractor	Ensure that sufficient stabilisation measures are implemented to secure structures vulnerable to high winds	Construction	ECO	Weekly, and as and when required	No incidents of unstable structures due to high winds is reported
Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.	cEO	Compile and regularly update as incidents and complaints are submitted from the public and indicate the actions taken to resolve the complaint	Construction	ECO	Monthly, and as and when required	The incidents and complaints register is complete and provides all the required details
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**
Mobile chemical toilets are installed onsite if no other ablution facilities are available;	Contractor	Mobile chemical toilets must be placed appropriately and in areas that avoid environmental sensitivities	Construction	ECO	Weekly	Mobile toilets are installed and avoid environmental sensitivities

The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances;	Contractor in consultation with the cEO	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement.	Pe-construction & Construction	ECO	Monthly, and as and when required	No evidence of non-compliance identified
Where mobile chemical toilets are required, the following must be ensured: a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly	Contractor in consultation with the cEO	The installation of the toilets by the Contractor must be as per the listed requirements	Construction	ECO	Weekly	No evidence of non-compliance identified

and the ECO must inspect toilets to ensure compliance to health standards;						
A copy of the waste disposal certificates must be maintained.	Contractor	Certificates obtained from the licensed waste disposal facility with the emptying of the toilets must be kept on file	Construction	ECO	Monthly, and as and when required	Certificates for waste disposal from the licensed waste disposal facility
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**
Undertake environmentally friendly pest control in the camp area;	Contractor & cEO	Only environmentally-friendly pest control must be used, when required	Construction	ECO & dEO	As and when pest control is required for the project	Contractor to provide proof of pest control used being environmentally-friendly
Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV/ AIDS;	cEO / Contractor in consultation with the ECO	The effects of sexually transmitted diseases and HIV/ AIDS must be overed in the Environmental Awareness Training	Pre-construction & Construction	ECO	Once, prior to the commencement t of construction and monthly during construction	Environmental awareness training material requirements checklist
The Contractor must ensure that information posters on HIV/ AIDS are displayed in the Contractor Camp area;	Contractor & cEO	Develop and place information	Construction	ECO	Monthly	Photographic evidence of poster placement

		posters on HIV/ AIDS				
Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;	cEO / Contractor in consultation with the ECO	Information and education of sexually transmitted diseases must be covered in the Environmental Awareness Training.	Pre-construction & Construction	ECO	Monthly	Environmental awareness training material requirements checklist
Free condoms must be made available to all staff on site at central points;	Contractor	Placement of free condoms in mobile toilets and at the construction camps	During the Construction Phase	ECO	Monthly	Proof of placement of free condoms by the contractor to be provided
Medical support must be made available;	dEO / cEO in consultation with the Contractor	Ensure that designated personnel with first aid training are available on site and that first aid kits to provide medical support is readily available	Construction and Operations	ECO	Monthly	Check the availability of first aid trained personnel and medical kits (including if these are complete in terms of supplies)
Provide access to Voluntary HIV Testing and Counselling Services.	Contractor & cEO	Compile a HIV testing schedule and provide counselling services where required	Construction	ECO	Quarterly, and as and when required	Voluntary testing schedules and proof of counselling (where undertaken)

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**
Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project	Contractor & cEO	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan compiled
The Emergency Plan must deal with accidents, potential spillages, and fires in line with relevant legislation;	Contractor & cEO	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project which covers accidents, potential spillages and fires	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan includes required specifications
All staff must be made aware of emergency procedures as part of environmental awareness training;	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the relevant emergency procedures	Pre-construction	ECO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist

The relevant local authority must be made aware of a fire as soon as it starts;	Contractor in consultation with the DPM / dEO / cEO & ECO	Develop and include a procedure in the Emergency Preparedness, Response and Fire Management Plan for the event of a fire and the procedure to be followed for informing the local authority	Construction	ECO	As and when a fire occurs	The local authority was informed as per the relevant procedure set out in the Emergency Preparedness, Response and Fire Management Plan
In the event of emergency, necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17).	Contractor & cEO	Implement the required mitigation measures in the event of a spill or leak as per the requirements of Section 5.17.	Construction and Operations	ECO	As and when a spill or leak occurs	The mitigation measures included under Section 5.17 have been adhered to
5.17 Hazardous substances						
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**
The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;	cEO in consultation with the Contractor	Develop a strategy of how hazardous substances can be and should be minimised	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the	Contractor to provide evidence of substances used for proof of compliance

					construction phase	
All hazardous substances must be stored in suitable containers as defined in the Method Statement;	Contractor & cEO	Develop a Method Statement for the storage of hazardous substances in suitable containers	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Photographic proof that hazardous substances are stored in suitable containers as per the requirements of the relevant Method Statements
Containers must be clearly marked to indicate contents, quantities, and safety requirements;	Contractor & cEO	Develop a Method Statement for the storage of hazardous substances in suitable containers	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Photographic proof that hazardous substances are stored in suitable containers as per the requirements of the relevant Method Statements
All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers;	Contractor / cEO / dEO	Where hazardous waste is stored these must be clearly marked indicating the	During the Construction Phase	ECO / dEO	Monthly	Photographic proof that containers are marked as per the requirements
Bunded areas to be suitably lined with a SABS approved liner;	Contractor & cEO	Where hazardous waste is stored these must be clearly marked indicating the	Construction and Operations	ECO / dEO	Monthly	Photographic proof that containers are marked as per the requirements
An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;	cEO / Contractor	Compile and update an Alphabetical Hazardous Chemical Substance (HCS)	Construction and Operations	ECO / dEO	Monthly, and as and when required	Complete and up to date control sheet provided by the Contractor

		control sheet specific to the project				
All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);	cEO / Contractor / dEO	Keep a record of all hazardous chemicals and the respective MSDS	Construction and Operations	ECO / dEO	Monthly, and as and when required	Record of hazardous chemicals and the respective MSDS
All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet	cEO / Contractor	Provide training for personnel working with HCS	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Record of training provided to personnel working with HCS
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;	cEO / Contractor	Develop environmental awareness training material which covers the relevant impacts and safety measures. Provide appropriate training and personal protective equipment for the relevant personnel handling hazardous substances and materials equipment for the relevant	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and monthly during the construction phase for personal protective equipment	Environmental awareness training material requirements checklist and all relevant personnel have undergone appropriate training and have access to personal protective equipment

		personnel handling hazardous substances and materials				
The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers	Contractor / cEO	Appropriate storage facilities must be constructed or obtained for the storing of diesel, other liquid fuel, oil and hydraulic fluid	Construction	ECO	Monthly, and as and when required	Storage tanks for the project are appropriate and no incidents are reported in this regard
The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall);	Contractor / cEO	Appropriate storage facilities must be constructed or obtained for tanks as per the requirements listed	Construction	ECO	Monthly, and as and when required	Storage areas for the tanks/ bowsers for the project are appropriate and no incidents are reported in this regard
The floor of the bund must be sloped, draining to an oil separator;	Contractor / cEO	Appropriate storage facilities must be constructed as per the requirements listed	Construction	ECO	Once, during construction	Bunded storage areas are constructed according to the requirements
Provision must be made for refuelling at the storage area by protecting the soil with an	Contractor / cEO	Appropriately constructed refuelling facility	Construction	ECO / cEO	Continuous	Soils at the refuelling facility are protected as

impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained;		must be developed as per the requirements. Drip trays must be provided for use				required and drip trays are provided and used
All empty externally dirty drums must be stored on a drip tray or within a bunded area;	Contractor / cEO	Ensure that empty dirty drums are stored appropriately according to a waste method statement	Construction	ECO / cEO	Continuous	Drip trays or bunded areas are used for the storage of dirty drums . Waste Method Statement on file
No unauthorised access into the hazardous substances storage areas must be permitted;	Contractor / cEO	Ensure through the implementation of procedures that no unauthorised access is undertaken into the storage areas	Construction	ECO	Monthly	Proof of the implementation of the relevant procedure must be provided by the contractor
No smoking must be allowed within the vicinity of the hazardous storage areas;	Contractor / cEO	Inform all employees of the requirement and develop and place relevant signage in the relevant areas	Construction and Operations	ECO / cEO / dEO	Monthly / Weekly	Photographic record of the signage placed must be provided
Adequate fire-fighting equipment must be made available at all hazardous storage areas;	Contractor / cEO / dEO	Hazardous storage areas must be fitted with adequate	Construction and Operations	ECO / dEO	Monthly	Adequate fire-fighting equipment is available and has been serviced

		fire-fighting equipment				
Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used;	Contractor / cEO	Provide a mobile refuelling unit as well as suitable ground protection, where required	Construction	ECO	Monthly, and as and when required	A mobile refuelling unit and suitable ground protection is available for use
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;	Contractor / cEO / dEO	Provide an appropriate spill kit for the project for the use of hazardous substances	Construction and Operations	ECO / dEO	Monthly, and as and when required	Appropriate spill kits are available for use
The responsible operator must have the required training to make use of the spill kit in emergency situations;	cEO and Contractor	Provide training on the use of spill kits to the relevant employees	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of training to be provided by the contractor
An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken;	cEO and Contractor	Provide an appropriate number of spill kits in relevant areas	Construction	ECO	Monthly	Proof of appropriate number of spill kits in appropriate areas to be provided by the contractor
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	cEO / Contractor / dEO	Storage and disposal of contaminated soil must be in accordance with the National Environmental Management: Waste Act and	During the Construction Phase and Operation Phase	ECO / dEO	Monthly, and as and when required	Proof of storage and disposal in terms of the National Environmental Management: Waste Act must be provided. Certificates of disposal at licensed

management and 5.8 for solid and hazardous waste management.		sections 5.7 and 5.8 of this EMPr				waste disposal facilities must be provided
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**
Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;	Contractor / cEO	Demarcate specific areas for the maintenance of vehicles and equipment	Construction	ECO	Monthly	A dedicated area for the maintenance of vehicles and machinery is used.
During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil.	Contractor / cEO	Ensure that a drip tray is available for an emergency repairs required	Construction	ECO	Monthly	Contractor to provide evidence of drip tray use for emergency repairs
Leaking equipment must be repaired immediately or be removed from site to facilitate repair;	Contractor / cEO	Ensure that where leaking equipment is identified it is repaired immediately or removed from site for repairs	Construction	ECO	Monthly	Contractor to provide details of equipment repaired or removed from site
Workshop areas must be monitored for oil and fuel spills;	cEO	Undertake regular inspections of the workshop areas for oil and fuel spills and keep an updated register of	Construction	ECO	Monthly	Register of inspection

		inspection on site				
Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;	Contractor / cEO	Provide an appropriate spill kit for the project	Construction	ECO	Monthly, and as and when required	Appropriate spill kits are available for use
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;	Contractor / cEO	Ensure that the workshop area is sufficiently bunded in accordance with the required specification	Construction	ECO	Once, during the Construction Phase and as and when required	Workshop area is bunded in accordance with the required specification
Water drainage from the workshop must be contained and managed in accordance with Section 5.7: storm and waste water management.	Contractor / cEO	Ensure that water drainage from workshop area is managed as per the requirements of section 5.7	Construction	ECO	Monthly	Workshop drainage is managed in accordance with the requirements
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**
Concrete mixing must be carried out on an impermeable surface;	Contractor cEO	Provide impermeable surface for the mixing of concrete	Construction	ECO	Weekly	No concrete mixing is undertaken on open ground
Batching plants areas must be fitted with a containment facility for the collection of cement laden water.	N/A					
Dirty water from the batching plant must be contained to	N/A					

prevent soil and groundwater contamination						
Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;	Contractor / cEO	Demarcate and provide a storage area for bagged cement in-line with the listed requirements	Construction	ECO	Weekly	Photographic proof of bagged cement stored within the demarcated area
A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;	Contractor / CEO	Provide a washout facility for the washing of associated equipment. Enforce limitations on water use for washing of equipment	Construction	ECO	Weekly	No cement laden water is released into the environment. Only minimal water is used for washing
Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licensed disposal facility;	Contractor / CEO	Make use of hardened concrete where possible or dispose of concrete in a suitable manner	Construction	ECO	Monthly	Certificates of disposal of concrete at licensed waste disposal facility
Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;	Contractor / cEO	Bind empty cement bags and temporarily store it in an appropriate area on site	Construction	ECO	Monthly	Proof of binding of empty cement bags and storage in an appropriate are on site to be provided by the Contractor
Sand and aggregates containing cement must be kept damp to prevent the	Contractor / CEO	Ensure that sand and aggregates are kept damp	Construction	ECO	Monthly	Proof of damping (or alternative dust suppression) of

generation of dust (Refer to Section 5.20: Dust emissions)		or otherwise protected from dust generation				sand and aggregates must be provided by the Contractor
Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility;	Contractor / cEO	Ensure that all excess sand, stone and cement is removed or reused	Construction	ECO	Once, with the completion of construction	Certificates for the disposal of sand, stone and cement at licensed waste disposal facilities or proof of reuse must be provided
Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation.	N/A					
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**
Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;	Contractor / CEO	Apply dust suppressant	Construction	ECO	Weekly	Contractor to provide proof of use of dust suppressants , Dust Management Method Statement
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;	Contractor	Proper planning for vegetation removal must be undertaken as well as for the associated rehabilitation	Construction and Rehabilitation	ECO	Weekly	Plan for implementation must be provided by the Contractor

Excavation, handling, and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;	Contractor	Ensure that specific limitations are placed on the transport and handling of erodible materials during high wind conditions or when a visible dust plume is present	Construction	ECO	Bi-weekly	No complaints submitted in this regard
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;	ECO	ECO to provide adequate recommendation	Construction	Not Applicable		
Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;	Contractor	Place soil stockpiles in areas less affected by wind	Construction	ECO	Bi-weekly	Soil stockpiles are not exposed to wind and have not been eroded
Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;	Contractor in consultation with the ECO	Contractor to implement erosion control measures as recommended and agreed with the ECO	Construction	ECO	Weekly, until erosion is no longer a problem	Recommendati ons made by the ECO have been implemented by the Contractor
Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when	cEO / dEO / Contractor	Inform all drivers of speed limits and place	Construction	ECO Operation and	Monthly	No complaints from community

traversing unconsolidated and non-vegetated areas;		appropriate signage along the relevant roads		Maintenance team		members are submitted
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;	Contractor	Ensure that straw stabilisation is undertaken as per the listed requirements	Construction	ECO	Monthly	Photographic record of all straw stabilisation undertaken
For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.	Contractor	Appropriate dust suppressant measures are implemented	Construction	ECO	Weekly	Photographic record of measures being implemented and the results thereof
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**
Any blasting activity must be conducted by a suitably licensed blasting contractor; and	Proponent	Proponent to appoint licenced blasting contractor	Prior to commencement of construction (if required)	ECO	Once-off	Contract documentation
Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.	Contractor	Appropriate notification methods	24 hours prior to blasting activities	ECO	Monthly	Proof of notification

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**
The Contractor must keep noise level within acceptable limits. Restrict the use of sound amplification equipment for communication and emergency only;	Contractor	Ensure that noise limits do not exceed acceptable limits and avoid the use of amplification communication	Construction	ECO	Monthly, and as and when required	No complaints registered in this regard. No amplification equipment is used.
All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;	Contractor / cEO	Provide and implement silencing technology	Construction	ECO	Monthly, and as and when required	No complaints registered in this regard. Silencing technology is utilised.
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;	cEO	Update complaints register. Provide daily transport to and from site for employees	Construction	ECO	Monthly, and as and when required	Complaints register provided by the cEO and proof of transportation services provided
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	cEO and Contractor in consultation with the ECO	Compile a Code of Conduct for staff. Appropriate operating hours must be identified for the project.	Pre-construction and Construction	ECO	Once, prior to the commencement of construction	No complaints registered in this regard.

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**
Designate smoking areas where the fire hazard could be regarded as insignificant;	cEO / Contractor	Identify and demarcate through signage designated smoking areas	Pre-construction & Construction	ECO	Monthly	Photographic record of designated smoking area
Firefighting equipment must be available on all vehicles located on site;	cEO / dEO in consultation with the Contractor	Provide all vehicles with firefighting equipment	Construction	ECO	Monthly	All vehicles are fitted with firefighting equipment and the details thereof are provided by the cEO
The local Fire Protection Agency (FPA) must be informed of construction activities;	cEO in consultation with the ECO	Undertake formal consultation to inform the local FPA of the associated construction activities	Pre-construction	ECO	Once, during the commencement of the Construction Phase	Proof of consultation with the FPA
Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;	dEO / cEO / Contractor in consultation with the ECO	Develop environmental awareness training material which covers the contact numbers for the FPA and emergency services. Place	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and once during the	Environmental awareness training material requirements checklist and photographic record of contact numbers on display

		the contact numbers for the FPA and emergency services at a visible and central location			construction phase	
Two-way swop of contact details between ECO and FPA.	ECO	Consultation between the ECO and FPA in order to exchange contact details	Pre-construction	Not Applicable		
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**
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;	Contractor / cEO	Identify and demarcate an appropriate location for the storage of excavated materials	Pre-construction & Construction	ECO	Monthly	Excavated material is not stored within sensitive environmental areas
All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;	Contractor / cEO	Implement appropriate and sufficient maintenance on stockpiled material regularly	Construction	ECO	Bi-weekly (every second month)	Stockpiled material is maintained sufficiently and is clear of weeds and alien vegetation
Topsoil stockpiles must not exceed 2 m in height;	Contractor / cEO	Enforce limitations for	Construction	ECO	Bi-weekly (every second month)	Topsoil stockpiles do not exceed 2m in height

		theheight of topsoil stockpiles				
During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g., cloth, tarpaulin etc.);	Contractor / cEO	Appropriate material must be provided in order to cover stockpiles when required	Construction	ECO	Monthly	Contractor to provide proof of availability of appropriate material to cover stockpiles when required
Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.	Contractor / cEO	Sandbags must be provided in order to prevent erosion of stockpiled materials	Construction	ECO	Monthly	Contractor to provide proof of availability of sandbags to prevent erosion of stockpiled materials
5.25 Finalising tower positions						
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**
No vegetation clearing must occur during survey and pegging operations;	Contractor /cEO	Implement restrictions in terms of vegetation clearing during the survey and pegging operations	Pre-construction	ECO	Weekly	Contractor to provide photographic proof that no vegetation has been cleared
No new access roads must be developed to facilitate access for survey and pegging purposes;	Contractor / cEO	Restrict the development of new access roads for survey and pegging purposes	Pre-construction	ECO	Weekly	Contractor to provide photographic proof that no new roads have been developed

Project manager, botanical specialist, and contractor to agree on final tower positions based on survey within assessed and approved areas;	DPM, dEO and Suitably Qualified Specialist and Contractor	Undertake consultation between the relevant responsible people and finalise the tower positions for the power line	Pre-construction	ECO	Once the final tower positions have been finalised and agreed upon	Provision of final tower positions to the ECO
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.	Surveyor in consultation with the ECO	Undertake consultation between the surveyor and the ECO	Pre-construction	ECO	Weekly	Consultation with the ECO regarding the distribution of pegs.
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**
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;	Contractor / cEO	Use a licensed waste disposal facility for the disposal of excess spoil	Construction	ECO	Monthly	Certificates obtained for the disposal of excess spoil at a licensed waste disposal facility
Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;	Contractor / cEO	Spoil used for landscaping must be applied as per the listed requirements	Construction and Rehabilitation	ECO	Monthly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
Management of equipment for excavation purposes must be	Contractor / cEO	Undertake the management of	Construction	ECO	Monthly	Management of equipment is

undertaken in accordance with Section 5.18: Workshop equipment maintenance and storage; and		equipment for excavation as per the requirements of section 5.18				undertaken in line with the requirements of section 5.18
Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances.	Contractor / cEO	Undertake the management of hazardous substances spills from equipment as per the requirements of section 5.17	Construction	ECO	Monthly	Management of hazardous substances spills from equipment is undertaken in line with the requirements of section 5.17
Batching of cement to be undertaken in accordance with Section 5.19: Batching plants;	N/A					
Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management.	Contractor / cEO	Undertake the disposal of residual cement as per the requirements of section 5.8	Construction	ECO	Monthly	The disposal of residual cement is undertaken in line with section 5.8.
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**
Prior to erection, assembled towers and tower sections must be stored on elevated surfaces (suggest wooden blocks) to minimise damage to the underlying vegetation;	Contractor / cEO	Provide the necessary materials for the elevated surface, where towers are to be placed on indigenous vegetation	Construction	ECO	Weekly	Implementation of elevated surface and photographic record thereof

In sensitive areas, tower assembly must take place off-site or away from sensitive positions;	Contractor in consultation with the cEO and the ECO	Identify sensitive areas to be avoided by tower assembly and ensure that the areas are not infringed upon	Pre-construction & Construction	ECO	Weekly	Tower assembly is undertaken outside of sensitive areas
The crane used for tower assembly must be operated in a manner which minimises impact to the environment;	Contractor in consultation with the cEO and the ECO	Ensure that no impact to the environment is imposed during the operation of the crane.	Pre-construction & Construction	ECO	Weekly	No environmental damages incurred as a result of the crane.
The number of crane trips to each site must be minimised;	Contractor in consultation with the cEO and the ECO	Ensure that the utilisation of the crane is maximised when on site.	Pre-construction & Construction	ECO	Weekly	Few crane trips to each site observed.
Wheeled cranes must be utilised in preference to tracked cranes;	Contractor	Ensure wheeled cranes are utilised.	Pre-construction & Construction	ECO	Weekly	Wheeled cranes observed on site.
Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact;	Contractor	Contractor to undertaken erecting of towers in an environmentally acceptable manner	Pre-construction & Construction	ECO	Monthly	No unacceptable environmental impacts occur with the erecting of the towers
Access to tower positions to be undertaken in accordance with access requirements specified in Section 5.4: Access Roads;	Contractor / cEO	Undertake access to tower positions as per the requirements of section 5.4	Construction	ECO	Monthly	Access to tower positions are undertaken as per the requirements of section 5.4
Vegetation clearance to be undertaken in accordance	Contractor / cEO	Undertake vegetation	Construction	ECO	Weekly	Vegetation clearance is

with general vegetation clearance requirements specified in Section 5.10: Vegetation clearing;		clearance as per the requirements of section 5.10				undertaken as per the requirements of section 5.10
No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor;	Contractor in consultation with the DPM and DSS	Written permission for levelling at tower sites, if required, must be obtained from the DPM and DSS prior to the undertaking of any levelling activities	Construction	ECO	Monthly, and as and when required	Written permission from the DPM and DSS provided to the Contractor
Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites;	Contractor / cEO	Implement appropriate measures to ensure that topsoil is removed from subsoil material	Construction and Rehabilitation	ECO	Weekly, and as and when required	Proof of appropriate measures implemented must be provided by the Contractor
Topsoil must be stored in heaps not higher than 2m to prevent destruction of the seed bank within the topsoil;	Contractor / cEO	Implement the listed requirements for the storage of topsoil	Construction	ECO	Weekly	Topsoil is stored as per the listed requirements
Excavated slopes must be no greater that 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes;	Contractor / cEO	Implement the listed requirements for the excavation of slopes	Construction	ECO	Weekly	Excavation of slopes is undertaken as per the listed requirements
Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working	N/A					

Area, must be collected and removed;						
Only existing disturbed areas are utilised as spoil areas;	Contractor in consultation with the ECO	Identify, demarcate and use existing disturbed areas for spoil areas	Pre-construction & Construction	ECO	Weekly	Only identified disturbed areas are used 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;	N/A					
Surface water runoff is appropriately channelled through or around spoil areas;	DPM and Contractor	Design and implement appropriate surface runoff measures for spoil areas	Pre-construction & Construction	ECO	Once, during the construction of the surface runoff measures	Implementation of surface runoff measures through and/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;	Contractor	Develop and implement backfilling procedures which ensures that topsoil is not placed at the bottom of foundations.	Pre-construction & Construction	ECO	Weekly	Backfilling operations areundertaken as per the procedures developed
The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;	Contractor / cEO	Rehabilitation of the surface spoil must be undertaken in accordance with the requirements of section 5.29	Rehabilitation	ECO	Weekly	Rehabilitation of the surface spoil is undertaken as per the requirements of section 5.29
The retained topsoil must be spread evenly over areas to be	Contractor / cEO	Ensure that topsoil is spread	Rehabilitation	ECO	Weekly	Proof that topsoil has been spread

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.		evenly and compacted appropriately. This must be undertaken outside of the start of the dry season				evenly and compacted correctly must be provided by the Contractor/ cEO. Proof that the activities were undertaken outside of the start of the dry season must be provided by the Contractor
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**
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;	Contractor in consultation with the ECO	Identify and demarcate areas appropriate for the siting of winch and tensioner stations which does not infringe on access restricted areas or environmentally sensitive areas	Pre-construction & Construction	ECO	Weekly	Winch and tensioner stations are located are located outside of identified 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;	Contractor / cEO	Provide sufficient drip trays	Construction	ECO	Weekly	Sufficient drip trays are available for the winch and tensioner stations and no spills occur

Refuelling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances;	Contractor / cEO	The refuelling of winch and tensioner stations must be undertaken as per the requirements of section 5.17	Construction	ECO	Monthly	The refuelling of winch and tensioner stations is undertaken as per the requirements of section 5.17
In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and handheld implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used;	Contractor	Develop and implement procedures for implementation for vegetation clearing during stringing in line with the specification.	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and weekly during stringing	Implementation of the procedures put in place and proof thereof from the Contractor
Alternative methods of stringing which limit impact to the environment must always be considered e.g., by hand or by using a helicopter;	Contractor	Identify and implement the stringing method with the least environmental impact	Construction	ECO	Weekly	Implementation of identified method of stringing with the least environmental impact
Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to	Contractor	Identify prior to construction areas where protection measures will be	Pre-construction & Construction	ECO	Monthly, and as and when required	Proof of implementation of protection measures and proof of written

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;		required during stringing. Where access is to be restricted timeous written notice must be provided to the affected parties				notice to affected parties must be provided by the Contractor
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;	Contractor in consultation with the cEO	Avoid the damaging or disturbance of existing services. Where services will be disrupted timeous notice must be provided to the affected parties	Construction	ECO	Monthly, and as and when required	No disruption of services occurs. Where disruption occurs proof of written notice to affected parties must be provided by the Contractor
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;	N/A					
Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries.	N/A					

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**
Develop and implement communication strategies to facilitate public participation;	dEO / cEO	Identify and implement appropriate strategies for communication with the communities through consideration of the community needs	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction	Communication is undertaken as per the identified strategies and no complaints are submitted regarding communication
Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;	Contractor / cEO	Development and implement a Grievance Mechanism which considers the community needs and provides procedures for conflict resolution	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Conflict resolution is undertaken in line with the requirements of the Grievance Mechanism. No complaints on conflict resolution is submitted by the community
Sustain continuous communication and liaison with neighbouring owners and residents	Contractor	Development and implement and Grievance Mechanism provides procedures for communication / liaison with neighbouring	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Communication / liaison with neighbouring landowners and residents are undertaken in line with the requirements of the Grievance Mechanism. No

		landowners and residents				complaints on communication with neighbouring landowners and residents is submitted
Create work and training opportunities for local stakeholders; and	Contractor	Develop and implement a "locals first" policy for the provision of employment opportunities	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	The "locals first" policy is considered in terms of the employment and training opportunities
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.	N/A					
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**
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;***	Contractor / cEO	Regular emptying of the bunds must be undertaken. This must be undertaken as per the requirements listed in sections 5.17 and 5.18	Construction	ECO	Prior to site closure for more than 05 days	Bunds are emptied as per the requirements listed under sections 5.17 and 5.18

Hazardous storage areas must be well ventilated;	Contractor / cEO	Install appropriate ventilation in all hazardous storage areas	Construction	ECO	Prior to site closure for more than 05 days	Effective ventilation is installed in hazardous storage areas
Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;	Contractor / cEO	Ensure fire extinguishers are serviced, as required and are easily accessible with appropriate signage indicating location. Ensure service records and kept up to date and filed	Construction	ECO	Prior to site closure for more than 05 days	Signage placed indicating location of fire extinguishers and service records
Emergency and contact details must be displayed;	Contractor / cEO	Place emergency and contact details which are readily available and easily accessible	Construction	ECO	Prior to site closure for more than 05 days	Photographic proof of contact details on display
Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;	Contractor in consultation with the ECO	Hold a workshop with all security personnel to provide a brief of the project and security requirements. Provide facilities in order to contact management	Construction	ECO	Prior to site closure for more than 05 days	Proof of the workshop held must be kept on file by the contractor.

		and emergency personnel				
Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;	Contractor	Regular checks of night hazards must be undertaken	Construction	ECO	Prior to site closure for more than 05 days	Proof of checks of night hazards must be provided by the contractor
Fire hazards identified and the local authority must have been notified of any potential threats e.g., large brush stockpiles, fuels etc.;	cEO / Contractor in consultation with the ECO	Identify any potential fire hazards and notify the relevant local authority	Construction	ECO	Prior to site closure for more than 05 days	Proof of notification of the fire hazards to the local authority must be provided by the Contractor
Structures vulnerdble to high winds must be secured;	Contractor	Ensure structures vulnerable to wind are secure prior to site closure	Construction	ECO	Prior to site closure for more than 05 days	Structures vulnerable to wind are secured prior to site closure
Wind and dust mitigation must be implemented;	Contractor / cEO	Implement wind and dust mitigation prior to site closure	Construction	ECO	Prior to site closure for more than 05 days	Wind and dust mitigation is implemented prior to site closure
Cement and materials stores must have been secured;	Contractor / cEO	Ensure cement and material stores are secured prior to site closure	Construction	ECO	Prior to site closure for more than 05 days	Cement and material stores
Toilets must have been emptied and secured;	Contractor / cEO	Ensure toilets are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Toilets are emptied and secured prior to site closure
Refuse bins must have been emptied and secured;	Contractor / cEO	Ensure refuse bins are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	refuse bins are emptied and secured prior to site closure

Drip trays must have been emptied and secured.	Contractor / cEO	Ensure drip trays are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Drip trays are emptied and secured prior to site closure
5.31 Landscaping and rehabilitation						
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**
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;	Contractor and ECO	Implement a rehabilitation plan; Dispose of all spoil and waste at a licensed waste disposal facility	Rehabilitation	ECO	Weekly	Rehabilitation of the disturbed areas is undertaken as per the rehabilitation plan. All waste disposal certificates are available.
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	Contractor and ECO	Assess all slopes	Rehabilitation	ECO	Weekly	All slopes are assessed and contoured as required
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;	Contractor and ECO	Assess all slopes	Rehabilitation	ECO	Weekly	All slopes are assessed and terraced as required
Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that	Contractor and ECO	Ensure all berms have a slope of 1:4 and is replanted with	Rehabilitation	ECO	Weekly	All berms have a slope of 1:4 and is replanted with indigenous species and grasses

approximates the original condition;		indigenous species				
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;	DPM	Ensure that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners	Rehabilitation	ECO	Weekly	Written permission from Landowners
Rehabilitation of tower sites and access roads outside of farmland;	N/A					
Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;	Contractor	Make use of indigenous species for rehabilitation	Rehabilitation	ECO	Weekly	Indigenous species are used for rehabilitation
Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas);	Contractor	Ensure stockpiled topsoil is used as per the requirements listed under section 5.24	Rehabilitation	ECO	Weekly	Stockpiled topsoil is used as per the requirements listed under section 5.24
Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;	Contractor	Ensure that topsoil is spread evenly	Rehabilitation	ECO	Weekly	Topsoil is spread evenly
Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;	Contractor / cEO	Remove all visible weeds from placement area and topsoil before spreading the topsoil	Rehabilitation	ECO	Weekly	No weeds are visible in the placement area or the topsoil

Subsoil must be ripped before topsoil is placed;	Contractor / cEO	Undertake the ripping of subsoil prior to the spreading of topsoil	Rehabilitation	ECO	Weekly	Subsoil is ripped before topsoil is placed
The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;	Contractor / cEO	Plan the timeframe for rehabilitation in order to undertake vegetation planting during the optimal time for vegetation establishment	Rehabilitation	ECO	At the start of rehabilitation to confirm correct timeframe	Rehabilitation is undertaken during the optimal time
Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;	Contractor / cEO	All disturbed slope areas must be stabilised	Rehabilitation	ECO	Weekly	Disturbed slopes are stabilised sufficiently
Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;	Contractor	Stabilise slopes as per the design specifications	Pre-construction & Rehabilitation	ECO	Weekly	Slopes are stabilised as per the design specifications
Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil.	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Rehabilitation	ECO	Weekly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor

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: 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	Contractor in consultation with a suitably qualified specialist	Make use of a suitable vegetation seed mixture should enhancement be required	Rehabilitation	ECO	As and when required	Use of a suitable vegetation seed mixture if required

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 Contact Details of the Applicant

Table 2: Details of the Applicant

Aspect	Description
Company Name:	South Africa Mainstream Renewable Power Developments (Pty) Ltd
Address:	4th Floor Mariendahl House Newlands on Main Corners Main & Campground Roads Claremont 7800
Responsible person:	Eugene Marais
Tel:	021 657 4045
Fax:	073 871 5781
E-mail:	eugene.marais@mainstreamrp.com

7.2 Details and Expertise of the EAP

Table 3: Details and Expertise of the EAP

Aspect	Description
Name of the EAP:	SLR Consulting South Africa (Pty) Ltd
Responsible Person:	Stuart Heather-Clark
Qualifications:	B.Sc. (Hons) Civil Engineering M.Sc. Environmental Management
Years of Experience:	24
Professional Membership:	IAIA EAPASA
Tel:	021 461 1118
E-mail:	shclark@slrconsulting.com

Refer to Appendix 2 of the EMPr for a Curricula Vitae of the EAP.

7.3 Project Details

Project Name: **Proposed Grid Connection Infrastructure, Ilikwa Solar PV Facility** near Sasolburg in the Free State Province

7.4 Project Description

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as 'Mainstream') are proposing to construct a 132 kV overhead transmission line to connect the proposed 100 MW_{ac} Ilikwa Solar PV Facility[1] to the existing Scafell Main Transmission Substation (MTS). The overall objective is to feed the 100 MW generated from the solar PV facility into the national grid.

Table 4: Transmission Line Technical Information

Component	**Ilikwa Grid Connection**	
Property details:	Proceederfontein 100 Portion 5 Willow Grange 246 Portion 3 Scafell 448 Remaining Extent	
Grid Connection Corridor Length & Width:	Up to 4.58 km long and 150 m wide (and up to 500 m around the switching station footprint)	
Servitude width:	Up to 31 m	
Grid Connection Corridor Coordinates	**Alternative 1**	**Alternative 2**
01	26°48'22.75"S 27°37'41.96"E	26°48'22.75"S 27°37'41.96"E
02	26°48'44.58"S 27°38'0.11"E	26°48'28.29"S 27°37'46.67"E
03	26°48'33.86"S 27°38'18.93"E	26°48'10.43"S 27°38'1.80"E
04	26°48'35.17"S 27°38'23.03"E	26°48'13.85"S 27°38'16.44"E
05	26°48'41.56"S 27°38'28.62"E	26°48'30.27"S 27°38'12.73"E
06	26°48'45.62"S 27°38'28.21"E	26°48'35.76"S 27°38'16.18"E
07	26°48'56.39"S 27°38'10.53"E	26°48'33.99"S 27°38'19.25"E
08		26°48'35.34"S 27°38'23.03"E
09		26°48'41.46"S 27°38'28.56"E
10		26°48'45.53"S 27°38'28.15"E
11		26°48'56.13"S 27°38'10.83"E
12		26°48'43.72"S 27°38'1.78"E
Switching Station Coordinates	26°48'20.98"S 27°37'39.08"E	

[1] DFFE Reference No.: 14/12/16/3/3/2/2078

Switching Station capacity:	33 / 132 kV
Switching Station footprint:	Up to 2.5 ha
Transmission Line capacity:	Up to 132 kV
Transmission Line length:	Up to 2 km
Transmission Line pylons:	Monopole or Lattice pylons, or a combination of both where required
Power Line pylon height:	Up to 40 m
Access to transmission line servitude:	A 12 m wide and 5 km long jeep track will be required and constructed during the construction phase of the proposed project. Existing roads and jeep tracks within existing servitudes in the study area will be used as far as possible to gain access to the grid connection corridor during the construction and operation phase of the proposed project.

7.5 Preliminary technical specification of the overhead transmission and distribution

Transmission Line Parameters	**Ilikwa Grid Connection**
Number of Pylons:	Unknown at this stage and will be confirmed following the completion of the survey and pegging of the grid connection corridor.
Conductor attachment height:	Unknown at this stage
Minimum ground clearance:	Up to 31 m

7.6 Sub-section 2: Development footprint site map

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

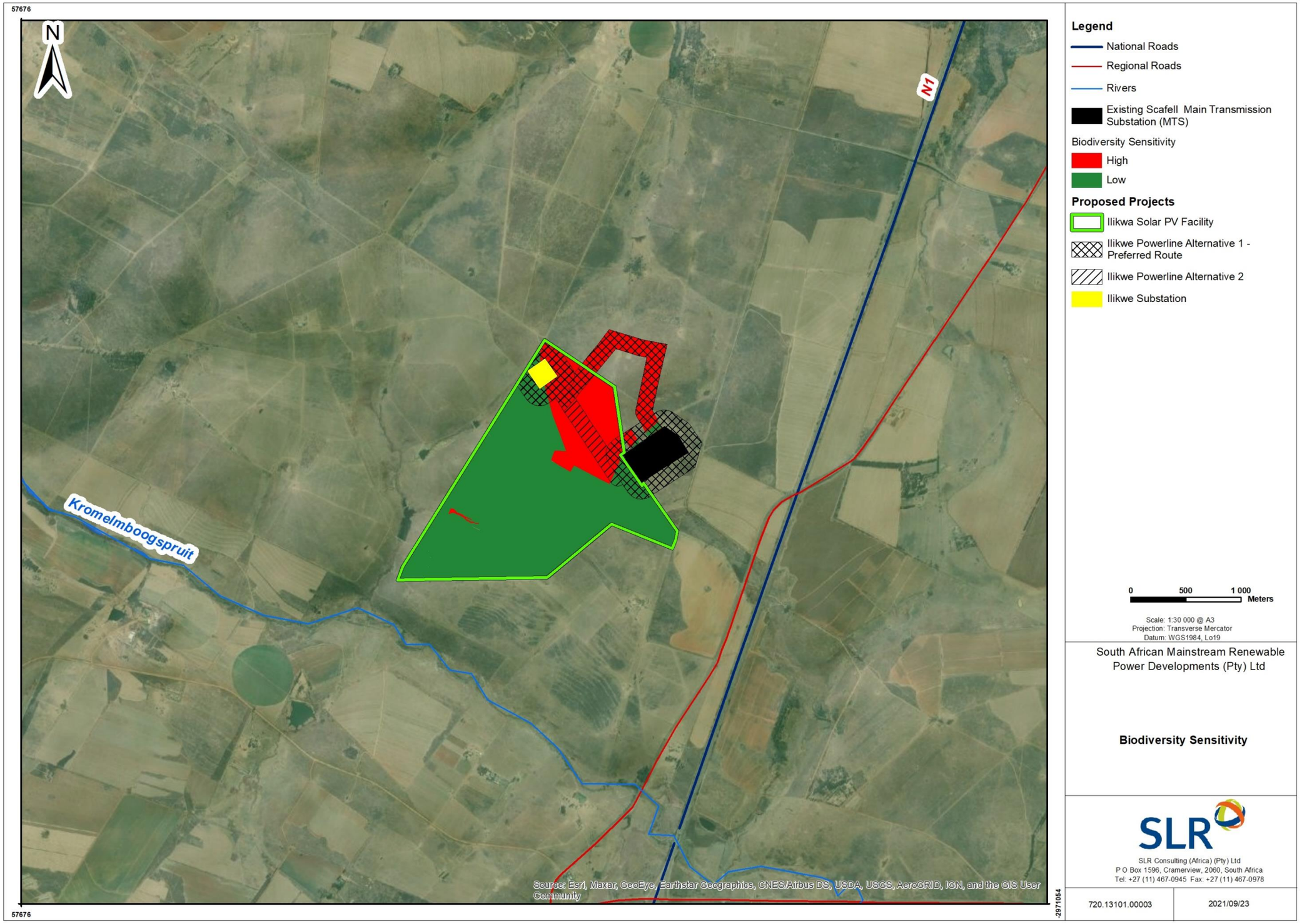

Figure 1: Preferred layout in relation to identified sensitive areas on the site.

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Screening Report Map

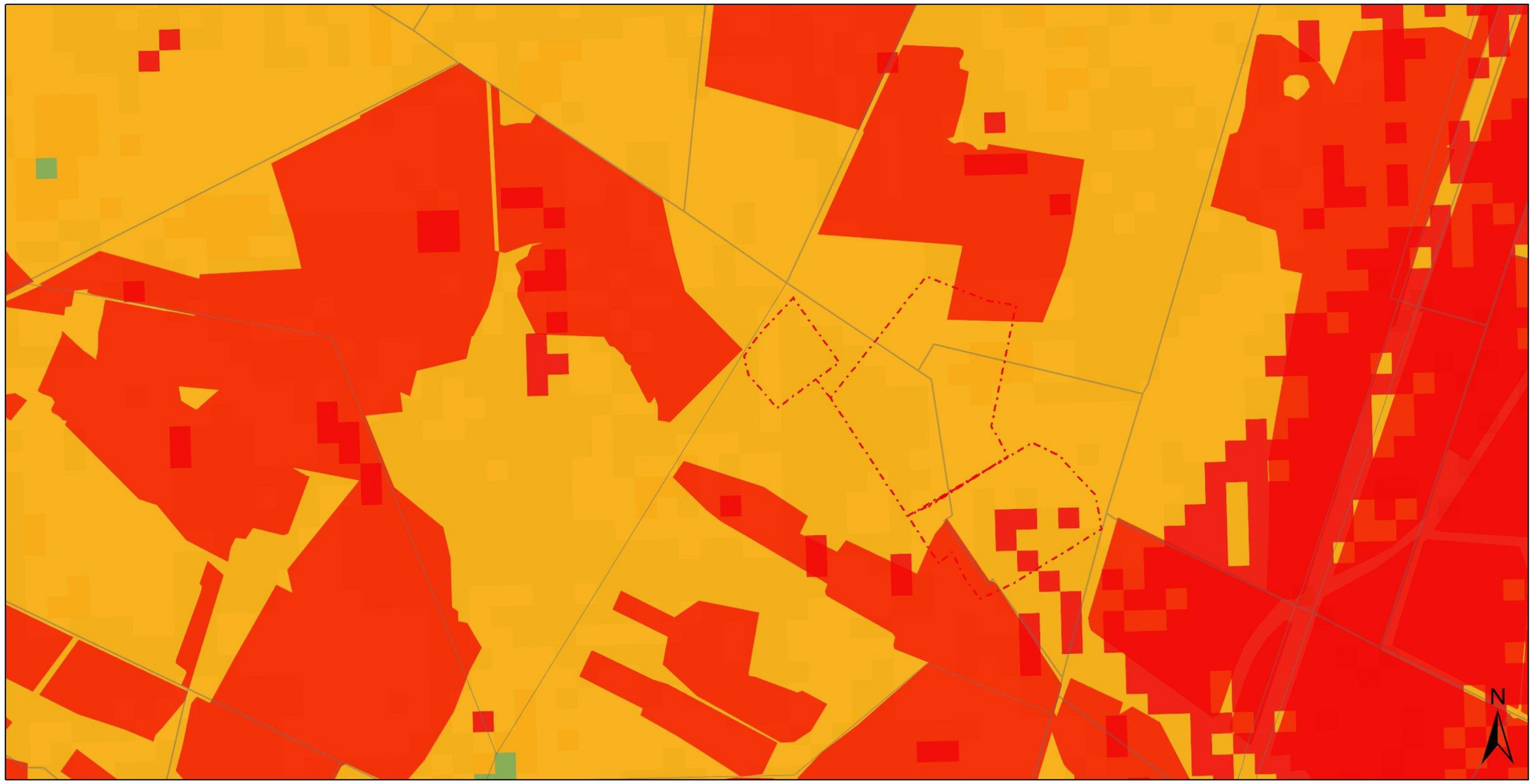

Figure 2: Map of relative Agriculture Theme Sensitivity

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Screening Report Map

Figure 3: Map of relative Animal Species Theme Sensitivity

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Screening Report Map

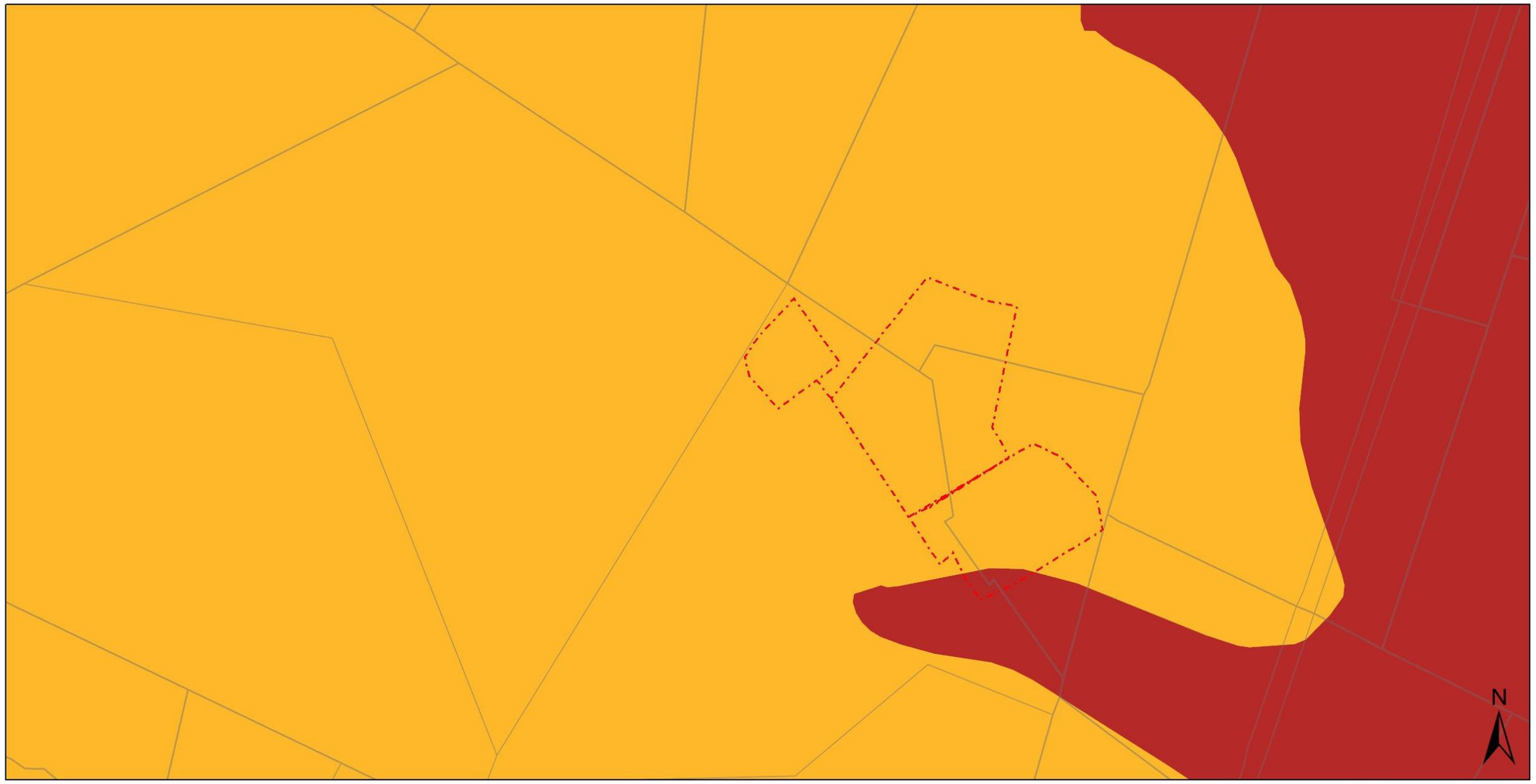

Figure 4: Map of relative Palaeontology Theme Sensitivity

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Screening Report Map

Figure 5: Map of relative Plant Theme Sensitivity

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Screening Report Map

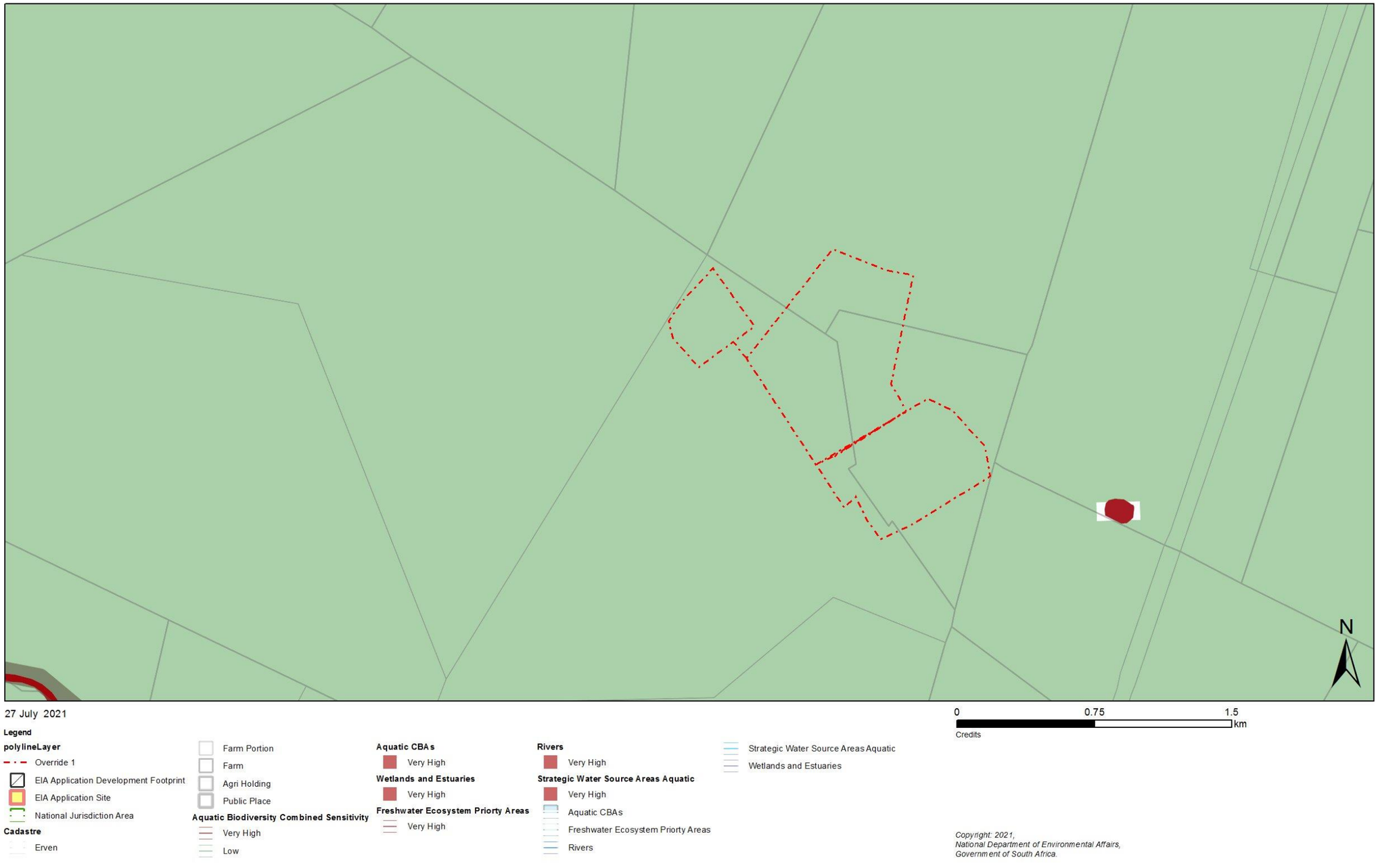

Figure 6: Map of relative Aquatic Theme Sensitivity

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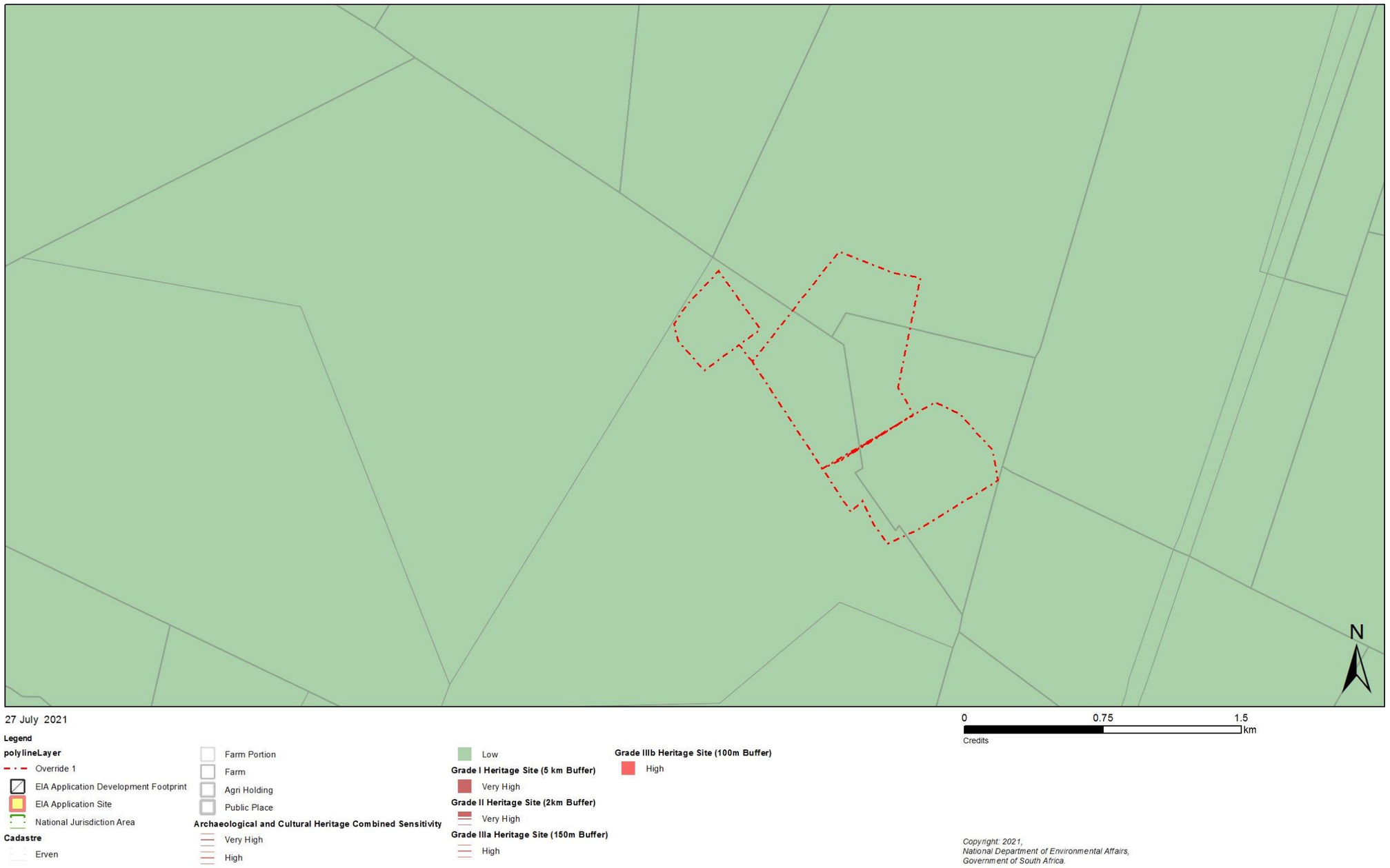

Figure 7: Map of relative Archaeology Theme Sensitivity

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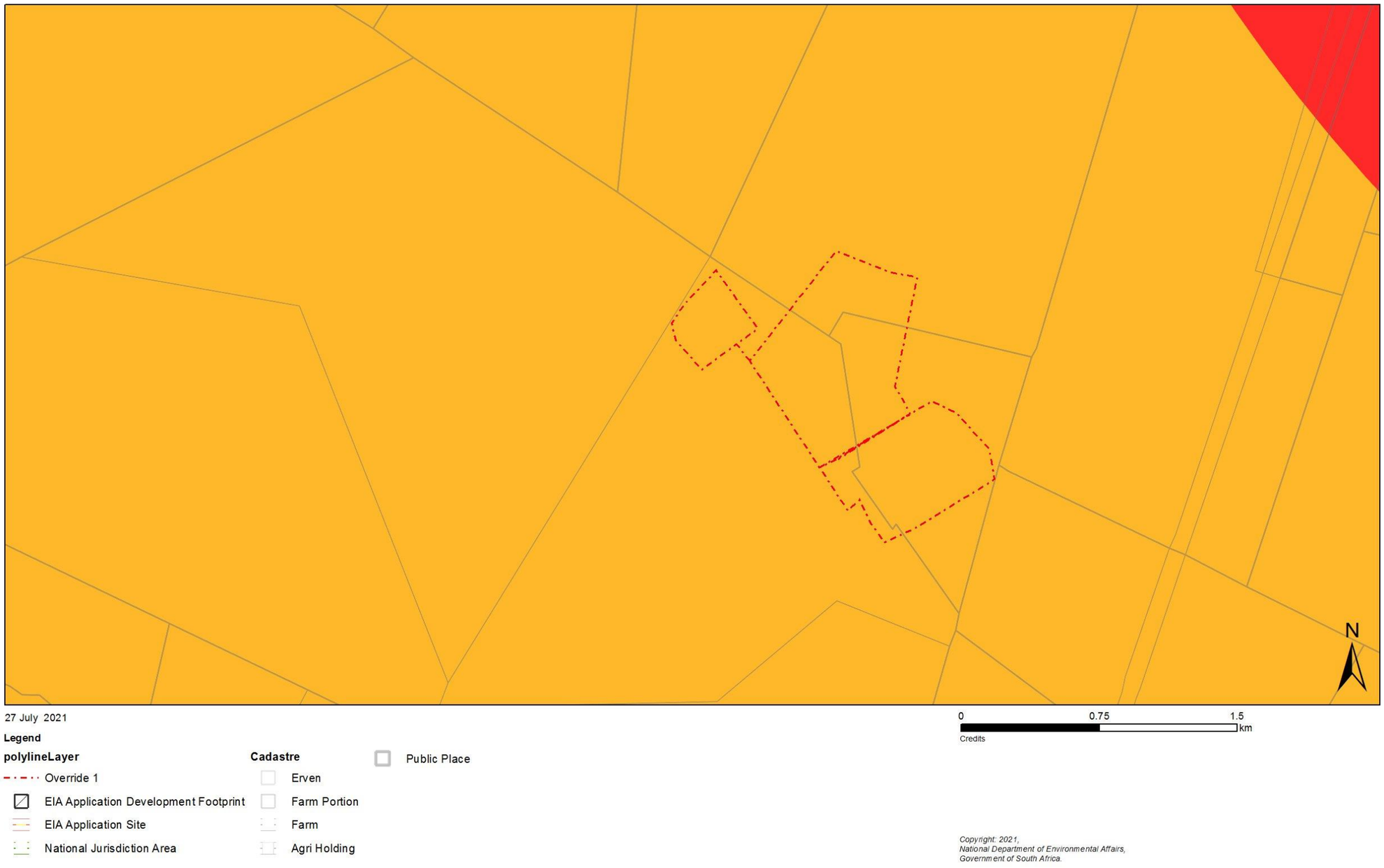

Figure 8: Map of relative Civil Aviation Theme Sensitivity

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Screening Report Map

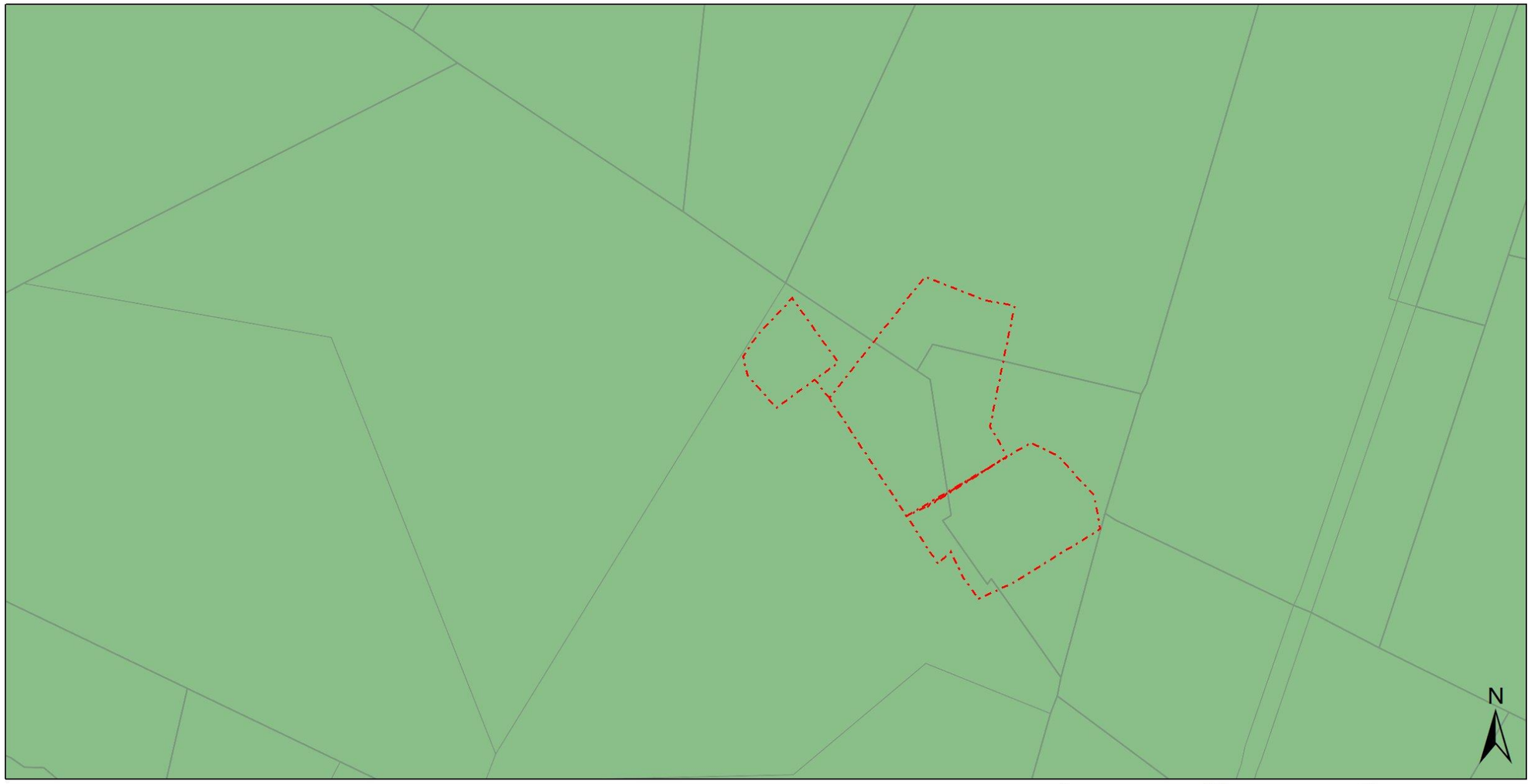

Figure 9: Map of relative Defence Theme Sensitivity

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Screening Report Map

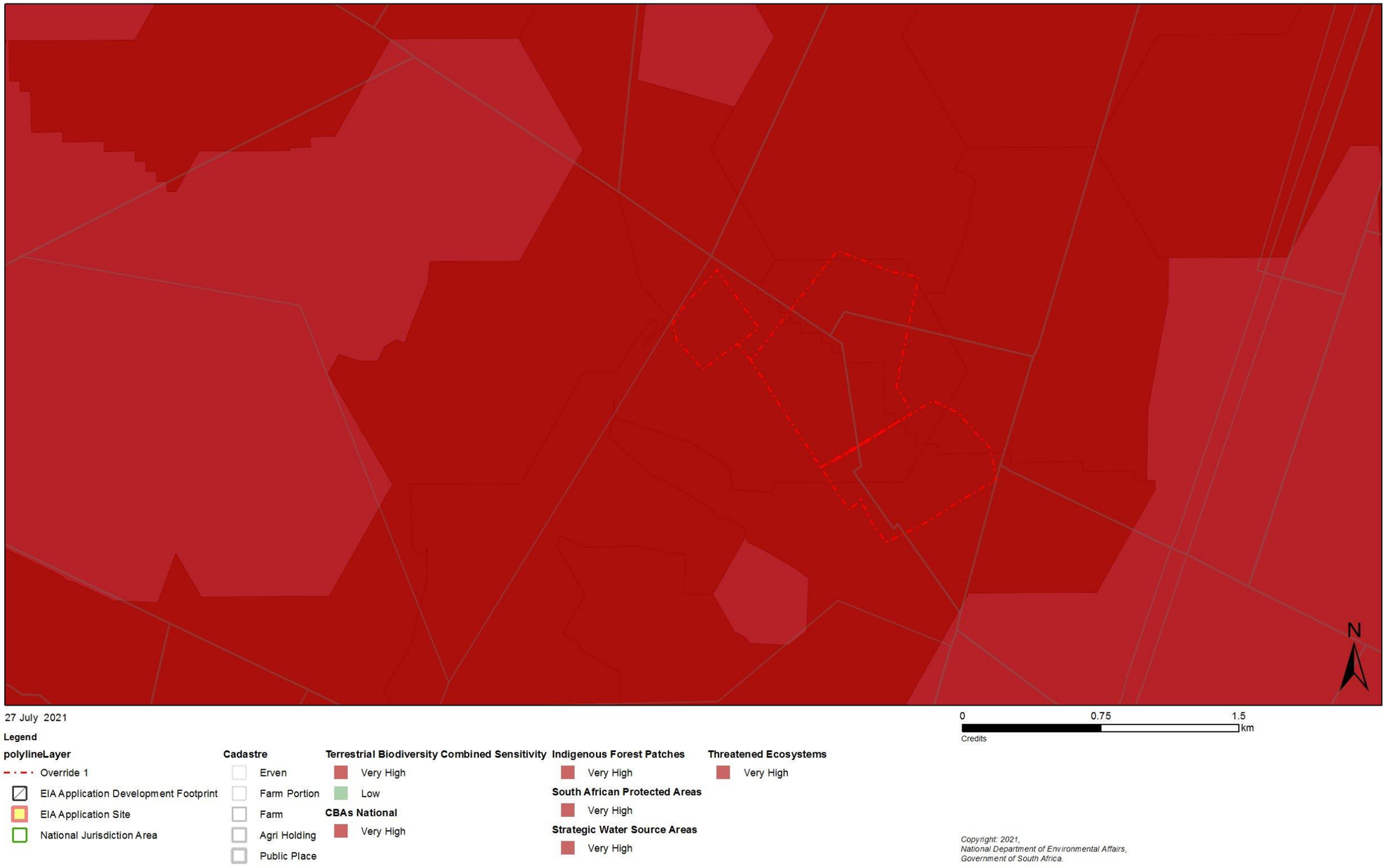

Figure 10: Map of relative Terrestrial Biodiversity Theme Sensitivity

7.7 Sub-section 3: Declaration

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

Signature[2] of Proponent / Application / Holder of EA	Date

7.8 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.

[2] This declaration will be signed by the proponent / applicant / holder of the EA once the Contractor is appointed for the proposed project and the Contractor has provided input to this EMPr.

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.

It should be noted that while the pre-approved generic EMPr template has covered the impacts identified for the site in the EIA, there may be additional specific environmental sensitivities/attributes that will need to be mitigated once the final walk-downs by a number of specialists for the Wind Energy Facility and Associated Infrastructure is undertaken when the project is considered a Preferred bidder and prior to Financial Close. This EMPr will need to be amended to include any new specific environmental sensitivities/attributes.

8.1 Visual

Specific Mitigation Measures						
Impact management outcome: Minimise light disturbance						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
It should be ensured that the overhead transmission lines run parallel to existing transmission lines, and other linear features as far as possible.	DPM	All mitigation measures recommended by the visual specialist must be implemented	Construction	ECO	Once off, and as and when required	Photographic record of compliance and successful implementation of the recommended measures

8.2 Avifauna

Specific Mitigation Measures						
Impact management outcome: To prevent unnecessary displacement of avifauna by ensuring that Contractor(s) are aware of the requirements of the Construction Environmental Management Programme (CEMPr)						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The avifaunal specialist must conduct a walk-through prior to implementation to demarcate sections of powerline that need to be marked with Eskom approved bird flight	DPM, Contractor, cEO & dEO	All mitigation measures recommended by the avifauna specialist must be implemented.	Construction and prior to Operations	cEO, dEO & ECO	Once-off prior to the stringing of the transmission line	Installation of bird flight diverters in the demarcated sections by the avifauna specialist.

Specific Mitigation Measures						
Impact management outcome: To prevent unnecessary displacement of avifauna by ensuring that Contractor(s) are aware of the requirements of the Construction Environmental Management Programme (CEMPr)						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
diverters. The bird flight diverters should be installed on the full span length on the earthwire (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.						Photographs Site Inspections and Audits
No off-road driving.	Contractor, cEO & dEO	Implementation of the CEMPr. Oversee activities to ensure that the CEMPr is implemented and enforced via site audits and inspections. Report and record any non-compliance.	Construction	Contractor and ECO	Daily	Photographs Site Inspections and Audits

Specific Mitigation Measures						
Impact management outcome: To prevent unnecessary displacement of avifauna by ensuring that Contractor(s) are aware of the requirements of the Construction Environmental Management Programme (CEMPr)						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Maximum use of existing roads, where possible.		Ensure that construction personnel are made aware of the impacts relating to off-road driving. Construction access roads must be demarcated clearly. Undertake site inspections to verify.			Weekly	
Measures to control noise and dust according to latest best practice.		Monitor the implementation of noise control mechanisms via site inspections and record and report non-compliance.			Weekly	

Specific Mitigation Measures						
Impact management outcome: To prevent unnecessary displacement of avifauna by ensuring that Contractor(s) are aware of the requirements of the Construction Environmental Management Programme (CEMPr)						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Restricted access to the rest of the property.		Ensure that the construction area is demarcated clearly and that construction personnel are made aware of these demarcations. Monitor via site inspections and report non-compliance.			Weekly	

8.3 Heritage and Palaeontology

Specific Mitigation Measures						
Impact management outcome: Minimise impacts on heritage resources during construction phase						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
A heritage walkdown survey should be conducted with a heritage specialist of the final pylon positions for the preferred grid connection corridor prior to construction.	DPM & dEO	All mitigation measures recommended by the heritage specialist must	Planning & Design	ECO	Once-off (during the detailed design of the	Availability of heritage walk down survey report that has been

Specific Mitigation Measures						
Impact management outcome: Minimise impacts on heritage resources during construction phase						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
		be implemented			transmission line)	compiled by the heritage specialist.
A Chance Finds Procedure should be implemented when heritage finds are uncovered.	DPM, Contractor & cEO	All mitigation measures recommended by the heritage specialist must be implemented.	Construction	dEO & ECO	Once-off (during excavations)	Photographs Site Inspections and Audits
If risks are manifested (accidental discovery of heritage resources) the Chance Find Procedure should be implemented: 1. Cease all works immediately; 2. Report incident to the dEO & ECO; 3. Contact an Archaeologist/ Palaeontologist to inspect the site; 4. Report incident to the Competent Authority; and 5. Employ reasonable mitigation measures in accordance with the	DPM, Contractor & cEO	All mitigation measures recommended by the heritage specialist must be implemented.	Construction	cEO, dEO & cEO	Once-off (during excavations)	Photographs Site Inspections and Audits

Specific Mitigation Measures						
Impact management outcome: Minimise impacts on heritage resources during construction phase						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
requirements of the relevant authorities. • Only recommence operations once impacts have been mitigated. • When excavations begin the rocks must be given a cursory inspection by the Environmental Control Officer or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. • Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.						

Specific Mitigation Measures						
Impact management outcome: Minimise impacts on heritage resources during construction phase						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
• Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. • If there is any possible fossil material found by the developer/environmental officer, then a qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible. • Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the Palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted						

Specific Mitigation Measures						
Impact management outcome: Minimise impacts on heritage resources during construction phase						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
to SAHRA as required by the relevant permits.						

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: EAP CURRICULA VITAE

EAPASA
Unit 19 Oxford Office Park
3 Bauhinia Street
Highveld Techno Park
Centurion
0157
Tel. (+27) 12 880 2154

Email: registrar@eapasa.org / Website: www.eapasa.org

Environmental Assessment Practitioners Association of South Africa
Advancing environmental assessment practice in South Africa

Mr Stuart Heather-Clark
22 Meadow Lane
Hout Bay
Cape Town
7806

Sent by email to: stuart.heatherclark@gmail.com

Dear Mr Heather-Clark

Registered Environmental Assessment Practitioner: Number 2019/613
Stuart Andrew Heather-Clark : South African ID 6708095058089

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Stuart Andrew Heather-Clark is a Registered Environmental Assessment Practitioner (EAP) 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).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

https://registration.eapasa.org/registered-practitioners

Your registration is effective for a period of five years from 24 January 2020, and expires on 24 January 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

Dr Richard Hill
Registrar
Date: 24 January 2020

SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Nicholas David Arnott

Registration Number: 113939

is registered as a

Professional Natural Scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science

Effective **25 May 2016** Expires **31 March 2020**

Chairperson

Chief Executive Officer

Scan this code to view online version of this certificate

CURRICULUM VITAE

STUART HEATHER-CLARK

TECHNICAL DIRECTOR
AFRICA POWER SECTOR LEAD

Environmental Management Planning & Approvals, Africa

QUALIFICATIONS

Masters	1996	Environmental Science
BSc (Hons)	1992	Civil Engineering

EXPERTISE

- Environmental and Social Impact Assessment
- Environmental Management Plans/Programmes
- Public Participation & Facilitation
- Environmental & Social Due Diligence
- Environmental & Social Screening & Site Selection
- Training and Capacity Building
- Strategic Environmental Assessment

Stuart has over 24 years of environmental and social consulting experience in Africa. Having worked on over 100 development projects in Africa, his key strength is identifying and managing ESG risks for major capital projects from the concept phase through to the pre-feasibility, feasibility and implementation phases.

Through leading Environmental & Social Screening Studies, Environmental & Social Impact Assessments and Environmental & Social Due Diligences for major capital project in over 13 African countries; Stuart has developed a deep appreciation of key sustainability challenges facing development in Africa. He has excellent project management skills with the ability to manage projects from the concept phase through to project completion.

Stuart has worked for and with a number of IFI's, DFI's and PE firms to identify and managing ESG risks of their investments in Africa. He has an integral knowledge of the Equator Principles and IFC Performance Standards and understands the expectations of lenders and financial institutions when it comes to managing ESG risks.

Stuart has worked across various sectors including O&G, mining, infrastructure and power. Over the past eight years he has focussed on the power sector leading projects for wind farms, solar PV plants, hydropower plants and gas to power plants. He has an integral understanding of the Independent Power Producers (IPP) process in South Africa and several other African counties.

PROJECTS

	All projects
Environmental and Social Impact Assessment for a 20MW solar PV plant and transmission line, Gigawatt Global, Liberia, (2020)	Project Director for the ESIA a 20MW solar PV plant and associated transmission line. The ESIA includes biodiversity, social and heritage baseline studies, stakeholder engagement and compilation of an ESIA Report and ESMP. The ESIA will be aligned with the IFC Performance Standards.
ESIA for an 80-200 MW wind farm development, Mphepo Power, Zambia (2019-20)	Project Director for the ESIA for the development of a wind farm in Zambia. The ESIA included terrestrial and aquatic, social, heritage, noise and visual baseline studies, stakeholder engagement and compilation of an ESIA Report and ESMP. The ESIA was aligned with the IFC Performance Standards.

Environmental and Social Impact Assessment for a Road Upgrade, QGMI, Ghana, (2019-20)	Project Director for the Scoping Phase of the Environmental and Social Impact Assessment process for the proposed Winneba Obetsebi-Lamptey Flyover (Phase 2) project in Accra, Ghana in collaboration with local consultants. The project included additional visual impact assessment, air quality modelling and noise modelling. All work undertaken to IFC Performance Standards.
Environmental and Social Impact Assessment (ESIA) for the Gamsberg Mine Zinc Smelter, Black Mountain Mine (Vedanta), South Africa (2019-20)	Project Director for the ESIA for a new zinc smelter and associated infrastructure to beneficiate the 250 000 to 300 000 tpa of zinc concentrate produced at the Gamsberg Zinc Mine Phase-1 concentrator plant. The ESIA included extensive baseline studies including biodiversity, social, air quality, noise, visual, hydrology, geohydrology, and climate change. The process included extensive stakeholder engagement during the scoping and impact assessment phase.
ESIA Scoping Phase for the desalination plant and water carrier system, NamWater, Windhoek Namibia (2019-20)	Team member for the ESIA Scoping Phase for the proposed desalination plant and water carriage system to secure water supply to the central coast, Windhoek and en-route users. The Scoping Process included extensive stakeholder engagement and the Scoping Report was aligned with the KfW Sustainability Guidelines and World Bank Environmental and Social Standards.
Environmental & Social Due Diligence for 5MW solar PV plant, Confidential Client, Namibia (2019)	Project Director for an Environmental and Social (E&S) Due Diligence (Red Flags only) of a 5 MW solar PV facility located near Outapi, Namibia.
Environmental & Social Screening Study for 20MW solar PV plant, CIGenCo, Eswatini (2019)	Project Director for an Environmental and Social (E&S) Screening Study of two potential sites for development of solar PV projects as part of CIGenCo's bid as part of the Eswatini Independent Power Producers Policy (ESIPPP).
Permitting Strategy and Planning for the Rovuma LNG Project in Mozambique, ExxonMobil, Mozambique (2018-2019)	Team member supporting Exxon with the permitting strategy and plans for the Rovuma LNG Project in northern Mozambique.
Environmental and Social Impact Assessment (ESIA) Gap Analysis for a 50MW solar PV Plant, Volt Renewable, Zimbabwe (2018)	Environmental lead for the review of the locally approved EIA against the IFC Performance Standards. Gaps were identified and an Environmental and Social Action Plan (ESAP) developed to close the gaps.
Environmental and Social Impact Assessment (ESIA) Gap Analysis for a 5-star hotel development, Motal-Engil, Zimbabwe (2018)	Environmental lead for the review of the locally approved EIA against the IFC Performance Standards. Gaps were identified and an Environmental and Social Action Plan (ESAP) developed to close the gaps.

Environmental and Social Screening Study for a 100MW hybrid HFO and Solar PV Power Plant for a mine in Mali, Confidential client (2018)	Environmental lead for the screening of environmental and social risks for the development of a solar PV plant on a mine in Mali.
Environmental and Social Screening Study for 3 x 40MW solar PV plants, Confidential Client, GETFiT Zambia (2018)	Project Manager for an environmental and social screening study for 3 x solar PV sites in Zambia. The Screening Study included the review of desk top information and site visits to assess environmental and social risks. A comparative analysis was undertaken to select the site with the least environmental and social risks. This was combined with the technical analysis to select the preferred site to be taken into more detailed studies.
Environmental and Social Impact Assessment for a 40MW solar PV farm, Enel Green Power, South Africa (2017)	Project Director for an Environmental and Social Impact Assessment for a 40MW solar PV plant in South Africa. The study included scoping and stakeholder engagement, various specialist studies and the compilation of an ESIA Report and ESMP.
Environmental and Social Impact Assessment for 2 run-of-river Hydropower Plants and associated transmission lines in Northern Zambia, Globeleq, Zambia (2017)	Project Director for an Environmental and Social Impact Assessment for 2 run-of-river hydropower plants and associated transmission lines on the Kalungwishi River in Northern Zambia. The study included scoping and stakeholder engagement, various specialist studies including environmental flow, heritage, social, biodiversity, visual, noise and other studies. All work was undertaken to IFC Performance Standards. The project was put on hold after the baseline and Scoping Phase.
Environmental and Social Screening Study for an 212MW HFO Power Plant, Confidential Client, Angola (2017)	Project Director for an Environmental and Social Screening Study for a 212MW HFO Power Plant in Angola. The study included noise and air quality baseline sampling, soil and groundwater baseline sampling, community health screening, and the compilation of a detail legal register and compliance road map.
Environmental and Social Screening Study for a Hydropower Plant in Gabon, Confidential Client, Gabon (2017)	Environmental and Social Screening Study for a Hydropower Plant in Gabon, Confidential Client, Gabon, 2017
Environmental and Social Due Diligence (ESDD) for two Solar PV and two Wind Farm Projects South Africa, Confidential Client, South Africa (2017)	Project Director for the ESDD for two Solar PV and two Wind Farm Projects in South Africa.
Environmental, Health and Safety Risk assessment of four Solar PV sites in South Africa, Enel Green Power, South Africa (2017)	Project Director for the EHS Risk Assessments.
Environmental and Social Impact Assessment for a 100MW to 250MW solar PV Plant, Globeleq, Zambia (2016-17)	Project Director for an Environmental and Social Impact Assessment for a 100MW to 250MW solar PV plant in Zambia. The study included the analysis of key environmental and social impacts, compilation of an ESIA and ESMP reports and stakeholder engagement.

Environmental and Social Screening Study for a solar PV Plant, Confidential client, Zambia (2016)	Project Director for an Environmental and Social Screening Study for the establishment of solar PV power plant in Zambia. The study included the analysis of key environmental and social risks including regulatory, biodiversity and social risks.
Environmental and Social Due Diligence, Six Solar PV Farms, Confidential Client, South Africa (2016)	Project Director for an ESDD for six solar pv farms is South Africa. The ESDD was undertaken against SA Legislation and Regulations and IFC Performance Standards.
Environmental and Social Impact Assessment for a CCGT Power Plant, ArcelorMittal, South Africa (2016)	Project Director for an Environmental and Social Impact Assessment study for the establishment of a CCGT power plant for ArcelorMittal in Saldanha Bay, South Africa. The ESIA includes detailed specialist studies including air emissions modelling, noise modelling, biodiversity and heritage assessment. Full stakeholder engagement is also part of the scope of work.
Environmental and Social Management Plans, Wind Farm Development, Confidential Client, Kenya (2016)	Project Director and involved in advising the client on various strategies including vantage point bird monitoring and management plan development.
Environmental and Social Screening Study of potential solar PV sites, Confidential Client, Ivory Coast (2016)	Environmental and Social Screening Study of potential solar PV sites, Confidential Client, Ivory Coast, 2016
Environmental and Social Impact Assessment for the Tete-Macuse Railway Line and Macuse Power Development, Italthai, Mozambique (2015-17)	Project Director for the Environmental and Social Impact Assessment (ESIA) for the proposed Tete-Macuse railway line and Macuse Port development for the export of coal from Tete Province in Mozambique. The project included the development of over 700km of railway line and a new port development.
Strategic Environmental Assessment for the supporting infrastructure for the Baynes Hydropower Project, Baynes PJTC, Namibia/Angola (2014-15)	Project Director for the Strategic Environmental Assessment of the associated infrastructure for the Baynes hydropower project. The SEA covered the assessment of access roads for construction, transmission lines routing in Angola and Namibia and locations of an airfield.
Cumulative Impact Assessment of the development of numerous hydropower plants on the Kwanza River, Odebrecht, Angola (2014-15)	Project Director for the Cumulative Impact Assessment of the development of a number of hydropower plants on the Cuanza River in Angola.
Environmental and Social Impact Assessment for the Batoka Gorge Hydropower Project, ZRA, Zambia/Zimbabwe (2014-15)	Advisor to the ESIA team undertaking the Environmental and Social Impact Assessment (ESIA) for the proposed Batoka Gorge Hydropower Plant on the Zambezi River below the Victoria Falls. The project includes the construction of a dam wall, hydropower plants, transmission lines and associated infrastructure. The ESIA is being conducted in alignment with the IFC Performance Standards and the World Bank Safeguard Policies.
Environmental and Social Impact Assessment for the Rehabilitation of the Kariba Dam Wall, ZRA, Zambia/Zimbabwe (2014-15)	Project Director for the Environmental and Social Impact Assessment (ESIA) for the proposed Kariba Dam Rehabilitation Project. The project includes the rehabilitation of the plunge pool and spillway of the dam wall. The project is being funded by the World Bank, African Development Bank and the EU.

Environmental and Social Due Diligence (ESDD) for a 98 MW wind farm in South Africa, Confidential Client, South Africa (2015)	Project Director for the ESDD.
Environmental and Social Due Diligence (ESDD) for a 2 x 75 MW solar pv farm in South Africa, Confidential Client, South Africa (2015)	Project Director for the ESDD.
Environmental and Social Due Diligence (ESDD) for a 74 MW wind farm in South Africa, Confidential Client (2015)	Project Director for the ESDD.
Environmental and Social Screening Study for a CCGT Power Plant, Confidential Client, South Africa (2015)	Project Director for an Environmental and Social Screening study for the establishment of a gas power plant in Saldanha Bay, South Africa. The screening study outputs included a permitting strategy, environmental opportunities and constraints maps, and input into the site selection process.
Environmental and Social Impact Assessment for Floating Power Plants in the Port of Richards Bay, Department of Energy IPP Office, South Africa (2015-16)	Project Director for the ESIA for the establishment of Floating Power Plants in the Ports of Richards Bay in South Africa. The ESIA includes detailed specialist studies including marine outfall modelling, air emissions modelling and marine ecology studies. Full stakeholder engagement is also part of the scope of work.
Environmental and Social Impact Assessment for Floating Power Plants in the Port of Richards Bay, Department of Energy IPP Office, South Africa, (2015-16)	Project Director for the ESIA for the establishment of Floating Power Plants in the Ports of Saldanha in South Africa. The ESIA includes detailed specialist studies including marine outfall modelling, air emissions modelling and marine ecology studies. Full stakeholder engagement is also part of the scope of work.
Environmental and Social Impact Assessment for LNG Import Terminal in the Port Richards Bay for the Gas to Power Programme, Department of Energy IPP Office, South Africa (2015-16)	Project Director for the ESIA for the establishment of LNG Import Terminals as part of the DoE's Gas to Power Programme in South Africa. The ESIA includes detailed specialist studies including marine outfall modelling, air emissions modelling and marine ecology studies. Full stakeholder engagement is also part of the scope of work.
Environmental and Social Impact Assessment for LNG Import Terminal in the Port Saldanha for the Gas to Power Programme, Department of Energy IPP Office, South Africa, (2015-16)	Project Director for the ESIA for the establishment of LNG Import Terminals as part of the DoE's Gas to Power Programme in South Africa. The ESIA includes detailed specialist studies including marine outfall modelling, air emissions modelling and marine ecology studies. Full stakeholder engagement is also part of the scope of work.
Environmental and Social Screening study for the establishment of an CCGT power plant in the Ports of Richards Bay, Confidential client, South Africa (2015)	Project Director for an Environmental and Social Screening Study for the establishment of a CCGT power plant in Richards Bay, South Africa. The study included the analysis of key environmental and social risks including air emissions, effluent emissions, biodiversity (terrestrial and marine) and social issues. The assessment applies to the power plant site, transmission line routing and pipeline routing and compares the opportunities and constraints associated with the two locations.

Environmental and Social Screening study for the establishment of an CCGT power plant in the Port of Saldanha, Confidential client, South Africa (2015)	Project Director for an Environmental and Social Screening Study for the establishment of a CCGT power plant in Saldanha Bay, South Africa. The study included the analysis of key environmental and social risks including air emissions, effluent emissions, biodiversity (terrestrial and marine) and social issues. The assessment applies to the power plant site, transmission line routing and pipeline routing and compares the opportunities and constraints associated with the two locations.
Environmental and Social Screening study for the establishment of an SCGT power plant in the Ports of Saldanha, Confidential client, South Africa (2015)	Project Director for an Environmental and Social Screening Study for the establishment of an SCGT power plant in the Port of Saldanha. The study included the analysis of key environmental and social risks including air emissions, effluent emissions, biodiversity (terrestrial and marine) and social issues. The assessment applies to the power plant site, transmission line routing and pipeline routing.
Environmental and Social Impact Assessment for the Burgan Oil Fuel Storage Deport in the Port of Cape Town, Burgan Oil, South Africa (2014-15)	Project Director for the ESIA for the Burgan Oil Fuel Storage Deport in the Port of Cape Town.
Millennium Challenge Account – Malawi: Infrastructure Development Project – Energy Sector (hydropower plants, transmission and distribution lines and substations), MCC, Malawi (2014-15)	Environmental Lead for the Independent Engineer to review all the Contracting Engineers environmental and social studies associated with the Infrastructure Development Project. The project includes the upgrade and development of new power infrastructure including hydropower plants, transmission lines, distribution lines and substations.
Strategic Environmental Assessment of the New Town Integrated Development Zone, TFM Mining, Katanga Province, DRC (2014)	Project Director for the Strategic Environmental Assessment of the New Town Integrated Development Zone undertaken for Tenke Fungurume Mining (TFM) in Katanga Province, DRC.
Environmental and Social Impact Assessment (ESIA) for the Gamsberg Zinc Mine, South Africa, Black Mountain Mine (Vedanta) (2012-13)	Project Director for the Environmental and Social Impact Assessment for a new Zinc Mine in the Northern Cape Province in South Africa. The ESIA includes the assessment of the mine and all associated infrastructure including waste rock dumps, tailing dams, processing plant, transmission lines, a new township development, upgrade of a water pipeline and associated water treatment facilities, and transport options to the Port of Saldanha via both road and rail. The ESIA is being undertaken as an integrative process to meet various environmental legal requirements including National Environmental Management Act (NEMA): EIA Regulations, NEM: Waste Act, NEM: Air Quality Act, NEM: Biodiversity Act, National Heritage Resource Act, National Water Act and the Minerals Petroleum Resources Development Act. The process includes various specialist studies, full stakeholder engagement as well as integration with a Biodiversity Off-sets process.
Environmental and Social Impact Assessment for the Expansion of Transnet's existing Manganese Ore Export Railway Line and Associated Infrastructure, South Africa (2012)	Project Director for the ESIA for the Expansion of Transnet's existing Manganese Ore Export Railway Line and Associated Infrastructure in the Northern and Eastern Cape, South Africa.

Ore Line Expansion Project for the Sishen-Saldanha Ore Line and Port of Saldanha, various Mining Companies and Transnet, South Africa (2011-2012)	Project Director for the Environmental and Social Screening Study for the Pre-feasibility Phase of the Ore Line Expansion Project. This included compiling a detail Environmental and Social Design Criteria Report together with initial Stakeholder Engagement. A detailed multi-criteria assessment for various port and stockpile options was undertaken. The project included upgrading over a 1000 km of railway line and upgrading the port facilities including stockpiles, stacker-reclaimers, conveyors and ship loading facilities. The stakeholder engagement process was specifically designed to obtain buy-in from stakeholder who were strongly opposed some components of the port and rail expansion.
Strategic Environmental Assessment for the Mozambican Regional Gateway Programme, MRGP, Mozambique, Malawi, Zambia, Zimbabwe (2012)	Project Director for the SEA of the MRGP. The MRGP aims to support the improvement of the Southern African transport (roads, rail and ports), regional infrastructure network, which uses Mozambique as a gateway for international trade. The MRGP geographic scope encompasses the Beira and Nacala Transport Corridors and the respective links to the Maputo and Limpopo Corridors. The SEA identified environmental and social issues that need to be considered in the long terms planning an implementation of the rail and port infrastructure that makes up the Beira and Nacala Transport Corridors.
Strategic Environmental Assessment (SEA) for the coastline of Mozambique, MICOA, Mozambique (2012)	Adviser on the SEA for the coast of Mozambique. The SEA aims to identify potential conflicts between various uses of the coastal zone and to recommend strategic interventions to facilitate sustainable development within the coastal zone. Various users of the coastal zone that are being considered include off-shore oil and gas operations, coastal mining, tourism, conservation and artisanal and industrial fishing.
Environmental and Social Screening Study for port options in Pemba Bay, Anadarko, Mozambique (2012)	Project Lead for an Environmental and Social Screening Study for various port options in Pemba Bay. The screening study includes a multi-criteria assessment of various port locations taking into account marine and terrestrial ecology, social issues, land ownership, legal aspects and physical marine conditions.
Environmental and Social Impact Assessment for a LPG import and distribution facility, Sunrise Energy, South Africa (2011-2012)	Project Director for the Scoping/EIA for a LPG importation, storage and distribution facility which includes a marine offloading facility in Saldanha Bay, a pipeline and a storage facility. The environmental permitting process required the liaison with local and provincial environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
Environmental and Social Screening Study for a Mine development in Angola, Confidential Client, Angola (2011-2012)	Project Director for the Environmental and Social Screening Study for the Concept Phase for a new mine development in Angola. The study included identifying environmental and social risks to the project and costing a full ESIA according to IFC Performance Standards and Equator Principles.
Equator Principles and IFC Performance Standards Training, Vedanta Resources Plc, Zambia (2012)	Lead facilitator of a 5-day training course on the implementation of the Equator Principles and IFC Performance Standards for a number of Vedanta's mining operations across Southern Africa, Europe and Australia.
Environmental and Social Impact Assessment for the upgrade of the Principe Airport, HBD, Principe (2011-2012)	Project Director for the Environmental and Social Impact Assessment for the upgrade of the airport in Principe.
EIA for a 380MW renewable energy facility north of Touwsrivier in the Western Cape (2010-2011)	Project Director for the Scoping/EIA for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.

EIA for a 170MW renewable energy facility east of Touwsrivier in the Western Cape (2010-2011)	Project Director for the Scoping/EIA for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
EIA for a 670MW renewable energy facility south of Sutherland in the Western and Northern Cape (2010-2011)	Project Director for the Scoping/EIA for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process requires the liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
EIA for a 500MW renewable energy facility south of Beaufort West in the Western Cape (2010-2011)	Project Director for the Scoping/EIA for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
EIA for a 120MW renewable energy facility south east of Victoria West in the Northern Cape (2010-2011)	Project Director for the Scoping/EIA for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
EIA for a 225MW wind farm in the Richtersveld, Western Cape (2011)	Project Director for the Scoping/EIA for a proposed wind farm. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
EIA for a 750MW wind farm in the Roggeveld, Western Cape and Northern Cape (2011) **Director**	Project Director for the Scoping/EIA for a proposed wind farm. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
EIA for a 225MW renewable energy facility between Vredenburg and Velddrif in the in the Western Cape (2010-2011)	Project Director for the Scoping/EIA for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies, public participation and impact assessment.
Environmental and Social Impact Assessment for the Lesotho Highland 150 MW Wind Power Project, Breeze Power, Lesotho (2011)	Project Director for the Scoping Phase of the Environmental and Social Impact Assessment for a 150MW wind farm development in Lesotho. The Scoping Phase included the analysis of available information to identify key environmental and social risks associated with the siting of the wind farm.
Environmental Screening Study for a Wind Farm Development in the Southern Cape, South Africa (2011)	Project Director for the Environmental Screening Study for a wind farm development in the Southern Cape.
Environmental and Social Due Diligence for a Wind Farm Development in Coega, Electrawinds, South Africa (2011)	Project Director for the Environmental and Social Due Diligence for a wind farm development in the Coega.

Environmental and Social Impact Assessment for Venetia Diamond Mine, De Beers, South Africa (2011)	Project Director for the Scoping and ESIA for the proposed new underground mine and EMP consolidation for existing mining activities. The ESIA was undertaken as an integrative process to meet various environmental legal requirements including National Environmental Management Act (NEMA): EIA Regulations, NEM: Waste Act, NEM: Air Quality Act, NEM: Biodiversity Act, National Heritage Resource Act, National Water Act and the Minerals Petroleum Resources Development Act.
Environmental and Social Impact Assessment for a river barging project on the Zambezi River, Riversdale Mining, Mozambique (2010-2011)	Project Director for the project which includes the assessment of environmental and social impacts associated with dredging over 500km of the Zambezi River. The project includes full stakeholder engagement, coordination of various specialist studies with extensive field work and the integration of all information into an ESIA report and ESMP.
EIA for two solar PV plant development, South Africa (2010)	Project Director of the EIA for the development of two solar PV plants in the Northern Cape and Free State Provinces of South Africa. ERM undertook the required studies to obtain environmental approval for these developments, including specialist studies such as landscape and visual and cultural heritage assessments, and stakeholder engagement.
Basic Assessment for the installation of wind measuring masts on six sites in the Western Cape and two sites in the Northern Cape (2010)	Project Director for the Basic Assessments to install wind measuring masts at eight sites in South Africa. The scope of work included the submission of the application, public participation, preparation of an EMP and submission of the Basic Assessment report.
EIA for a 100MW renewable energy facility north of Velddrif in the in the Western Cape (2010)	Project Director for the Scoping process for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required the liaison with local, provincial and national environmental authorities, co-ordination of specialist studies and public participation.
EIA for a 300MW renewable energy facility east of Lambert's Bay in the Western Cape (2010)	Project Director for the Scoping process for a proposed renewable energy facility incorporating wind and photovoltaic power generating technologies. The environmental permitting process required liaison with local, provincial and national environmental authorities, co-ordination of specialist studies and public participation.
External adviser and reviewer for an ESIA for a wind farm development in the Eastern Cape, Confidential Client, South Africa (2010)	Adviser and reviewer for an EIA for the development of a wind farm in the Eastern Cape.
Environmental Advisor Environmental and Social Impact Assessment for the Mphanda Nkuwa Hydropower Project in Mozambique (2010)	Advisor for the ESIA for the Mphanda Nkuwa Hydropower Project in Mozambique. The core service was to advise the project team on international standards such as the IFC Performance Standards and World Commission on Dams.
Environmental Sensitivity Study of the Durban Airport Site Expansion Project , South Africa, Transnet (2010)	Project Director for the Environmental Sensitivity Study for the proposed dig-out port currently being considered by Transnet at the Durban International Airport Site. The aim of this assessment was to determine the biophysical, natural and social opportunities and constraints to the development of the dig-out port, as well as provide a strategic overview of the environmental context of the site. In addition, the sensitivity study provided strategic guidance in terms of the environmental due process and licensing requirements with respect to the National Environmental Management Act, and associated legislation.

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ESIA for a new high voltage overhead transmission power line in Cameroon, AES Sonel, Cameroon (2007- 2009)	Project Director for the Environmental and Social Impact Assessment and a full Resettlement Action Plan for a new electricity distribution project, comprising a 113km overhead power line, for AES Sonel. As Project Director, Mr Heather-Clark was responsible for client liaison, quality control and final review of all reports.
Advisor to the Environmental and Social Impact Assessment for the Baynes Hydropower Project in Namibia and Angola (2009)	Project Advisor for the Environmental and Social Impact Assessment for the proposed Baynes Hydropower Project on the Kunene River. The ESHIA process is being conducted in accordance to the Angolan EIA Regulations, the Namibian EIA Regulations, the World Bank Safeguard Policies and the IFC performance standards.
Environmental and Social Impact Assessment for the upgrade of a 1100 km railway line in South Africa, Transnet (2008- 2009)	Project Director for the Environmental and Social Impact Assessment for the upgrade of a commodities railway line across South Africa. The project included a number of specialist studies, managing subcontractors, interfacing with the railway engineering team, report writing, managing an extensive stakeholder consultation process, client liaison and management of project finances.
Environmental and Social Impact Assessment for the services corridor associated with the development of a greenfield CTL Plant, Sasol, South Africa (2009)	Project Director for an ESIA of a services corridor to support the development of a greenfield CTL plant development in South Africa. The ESHIA process was conducted in accordance to the South African EIA Regulations and the IFC performance standards.
Environmental and Social Impact Assessment for 2D seismic exploration project in the Rovuma Basin, Petronas, Mozambique (2009)	Project Director for the ESIA for the offshore seismic exploration activities in Blocks 3 & 6, situated in the Rovuma Basin off the coast of Mozambique. The exploration activities comprise 2D seismic surveys in deepwater.
Environmental and Social Screening Study for a river barging project on the Zambezi River, Riversdale Mining, Mozambique (2009)	Project Director for the project which included the assessment of environmental and social risks associated with dredging over 500km of the Zambezi River. The project included reviewing existing information, mapping key sensitivities and facilitating a specialist workshop in order to develop Terms of Reference for detailed baseline studies that will be required should the project proceed to a full ESIA.
Equator Principled and IFC Performance Standards Review and Training, African Housing Solutions, South Africa (2009)	Lead reviewer for the ESIA and Resettlement Policy Framework, for a housing development in Nigeria, against the Equator Principles and IFC Performance Standards. Mr Heather-Clark was responsible for reviewing the ESIA Report and for presenting a 2 ½ day training course on the Equator Principles and IFC Performance Standards.
Environmental Assessment for the dredging and disposal of dredge spoil at the Port of Saldanha, Transnet, South Africa (2008)	Project Director for this project and was responsible for guidance of technical studies which included dredging studies and marine sediment contamination characterization. The study included the assessment of dredge spoil dumping alternatives. Stakeholder engagement included an important component of the project.
Environmental and Social Screening Study, Port of Saldanha, Transnet, South Africa (2008)	Project Director for the screening study which included an assessment of alternative berth options for the export of iron ore at the iron ore terminal at the Port of Saldanha, South Africa. The work included ongoing interaction with the port engineering and design teams, together with stakeholder engagement.

ESIA for an Early Production System (EPS) and Power Plant for Kaiso-Tonya Area, Exploration Area 2, Tullow Uganda Operations Pty Ltd, Uganda (2007-08)	Project Director for the project which included a full ESIA for an Early Production System and associated Power Plant in the Kaiso-Tonya area on the banks of Lake Albert, Uganda. The intent of the project is to produce oil (and small amounts of gas) which will be converted into electrical power and distillate products (kerosene and diesel) for consumption within Uganda. The electrical power will be fed into the main grid supplementing the Ugandan electrical power grid while the distilled products (diesel and kerosene) will be used to displace the currently imported fuels. The ESIA included a detailed assessment of alternative sites for the proposed EPS and power plant, together with various environmental and social baseline studies and stakeholder engagement.
ESIA monitoring studies for Sasol's Off-shore gas exploration activities in Inhambane and Sofala Provinces, Mozambique, Sasol Petroleum Sofala & Empresa Nacional de Hidrocarbonetos (2007-08)	Project Director for an environmental monitoring survey programme for Sasol's offshore hydrocarbon exploration activities. Monitoring studies included seismic noise modelling and monitoring, dugong surveys, artisanal fish catch monitoring, coral reef surveys and monitoring, sea turtle monitoring and tourism monitoring.
Strategic Environmental and Social Overview and ESIAs for offshore exploration well drilling activities in Blocks 2 and 3A, Lake Albert, Uganda. Tullow Oil Plc and Heritage Oil and Gas Limited (2006- 2008)	Project Director for this project. The project involved undertaking a strategic overview study of Lake Albert that provided background information on the limnological (physical, chemical and biological) features of the lake as well as environmental and socio-economic resources (such as nature reserves, tourism nodes, prime fishing areas etc). It also presented areas of environmental risk and opportunity associated with oil explorations on, and immediately adjacent to, the lake. The strategic overview provided a framework within which ESIAs were undertaken for the offshore drilling project. A site selection study was undertaken for onshore support infrastructure. Baseline studies included shoreline sensitivity mapping, oil spill modelling, water and sediment quality surveys, fish and fisheries surveys, socio-economic surveys and terrestrial ecology surveys. An extensive public participation process was undertaken as part of the ESIAs.
Environmental and Social Baseline Assessment for a green fields coal mine and CTL plant development, Sasol, South Africa (2008)	Project Director the environmental and social baseline studies to support the evaluation of sites for potential development of a green field's coal mine and associated CTL Plant in South Africa. Mr. Heather-Clark has assisted with review and quality control of the various baseline studies.
Development of guideline document for the integration of environmental and social issues into the project lifecycle for mine development, De Beers, South Africa (2008)	Team member of the project team that assisted the client in developing a detailed guideline document for the integration of social and environmental issues into mine planning. This included all phases of the planning process from Concept through to Pre-feasibility, Feasibility and Implementation. Mr Heather-Clark, as lead facilitator, presented a 2 day training course on these guidelines, to mine planners and engineers.
EIA for a Metal Recovery Plant and Slag Crushing, Screening and Weathering facility at Arcelor Mittal Saldanha Works, MultiServ, South Africa (2007 – 2008)	Project Director for the EIA, including a public consultation process and the following specialist studies: air quality, groundwater, noise impact assessment, botanical and archaeology studies and a traffic impact assessment. Mr Heather-Clark was responsible for client liaison, quality control and final review of all reports.

Implementation of the Equator Principles for Standard Bank's Project Financing Processes, Standard Bank, South Africa (2008)	Lead facilitators for Equator Principles and IFC Performance Standards training to assist Standard Bank in adopting the Equator Principles. An assessment system (based on the IFC Performance Standards) to link with Standard Bank's project finance transaction life-cycle was developed. This involved the development of "tools" and guidance documents to form a system, together with training on the use of the system for all project finance staff.
Comparative review of EIAs undertaken by ERM globally for electricity utilities, Eskom, South Africa (2007)	Project Director for this project. The project included research to provide Eskom with an overview of different EIA governance systems and approaches to managing EIAs in other countries, as well as identifying trends in EIA practice.
Environmental and Social Screening and Qualitative Risk Assessment Western Ports and Rail Corridor, Transnet, South Africa (2007)	Project Director involved in identifying environmental and social risks associated with future port development in the Port of Saldanha, Port of Cape Town and Port of Mossel Bay. The scope of the study included the review of previous EIAs, SEAs and other planning documents to identify environmental and social drivers and assess their risk to future port planning, development and operations. As the environmental team, ERM interacted on a regular basis with the port engineering and design teams to develop a port development framework for a 30 year planning period.
Environmental and Social Screening and Qualitative Risk Assessment Central Ports and Rail Corridor, Transnet, South Africa (2007)	Project Director involved in identifying environmental and social risks associated with future port development in the Port of East London, Port of Port Elizabeth and Port of Ngqura. The scope of the study included the review of previous EIAs, SEAs and other planning documents to identify environmental and social drivers and assess their risk to future port planning, development and operations. As the environmental team, ERM interacted on a regular basis with the port engineering and design teams to develop a port development framework for a 30 year planning period.
Environmental and Social Screening and Qualitative Risk Assessment Eastern Ports and Rail Corridor, Transnet, South Africa (2007)	Project Director involved in identifying environmental and social risks associated with future port development in the Port of Durban and Port of Richards Bay. The scope of the study included the review of previous EIAs, SEAs and other planning documents to identify environmental and social drivers and assess their risk to future port planning, development and operations. As the environmental team, ERM interacted on a regular basis with the port engineering and design teams to develop a port development framework for a 30 year planning period.
EIA of the Moatize Coal Mine and associated railway line and deep water port infrastructure, CVRD, Tete Province, Mozambique (2006-2007)	Project Coordinator and Cost Controller on this project. ERM was commissioned by CVRD, a Brazilian Mining Company, to undertake environmental studies related to the green fields development of a coal mine in Tete Province, Mozambique. The project included the development of a power plant, railway line and port for the export of coal.
Corporate Social Responsibility Strategy development for a leading South African retailer, South Africa (2006)	Lead facilitator for this project. The project involved identifying and prioritising the company's sustainability issues and defining a strategy to address these issues. The process was driven by the need for the company to be listed on the Johannesburg Stock Exchanges SRI Index.
Research project on the effects of water scarcity on the fresh produce supply to a major South Africa retailer, South Africa (2006)	Project Leader coordinated a group of researchers to identify water scarce areas and to plot these against the location of fresh produce suppliers for a major retailer in South Africa. This researched form a core component of the companies Sustainability Strategy.
Independent Environmental Advisers to the Financing Parties of the Gautrain Rapid Rail Link project, Bowman Gilfillan (2006)	Independent Environmental Advisers to the Financing Parties, provided review and advisory services through Bowman Gilfillan on Environmental Management Plans for the Gautrian Rapid Link project.

ESIA for seismic surveys and exploration well drilling and testing in Blocks 16 and 19 off the coast of Mozambique, Sasol Petroleum Sofala & Empresa Nacional de Hidrocarbonetos (2005 – 2006)	Project Manager for the ESIA which involved undertaking an ESIA and compiling EMPs for offshore exploration activities in Blocks 16 & 19, situated to the east of the Bazaruto Archipelago National Park, off the coast of Mozambique. The exploration activities comprised 2D and 3D seismic surveys in deepwater and shallow water as well as exploration well drilling and testing activities.
EIA for the upgrade and expansion of the existing sinter plant at Vanderbijlpark, ArcelorMittal, South Africa (2006)	Project Director for the EIA and stakeholder engagement process to meet South African requirements. This included coordination of the technology review, air quality, health and waste management specialist studies and compilation of the integrated Scoping and EIA Report.
Review of Sustainability Report and Sustainability Management System, Confidential, South Africa (2004)	Lead reviewer of the Sustainability Report of a leading retailer in South Africa and providing adhoc advice on sustainability issues. This included compiling a monthly news letter to staff on relevant sustainability issues facing the retail industry in South Africa.
EIA of a proposed expansion of the Container Terminal Stacking area at the Port of Cape Town, National Ports Authority, South Africa (2003-2004)	Project Manager for this EIA. The project included the expansion of the Cape Town container terminal into the sea though dredging 1 million m3 of material for reclamation. The project included a detailed study on alternative sources for fill material and other studies which focused on marine archaeology, coastal erosion, marine hydrodynamics and water quality, visual, noise and traffic. The EIA included full stakeholder engagement throughout the EIA process.
Environmental Site Suitability Study for a manganese smelter, Asia Minerals Limited (2004)	Part of the project team that undertook a preliminary site selection process for a manganese smelter by identifying key environmental and social issues for potential sites within Southern Africa. Sites included the Belualane Industrial Park (Mozambique) and Richards Bay, the Coega Industrial Development Zone (IDZ) and Saldanha (South Africa).
DFID funded project to assess progress towards meeting the water relater targets of the Millennium Development Goals, DIFD, Zambia (2004)	Country Coordinator for Zambia on this project. The project included detailed stakeholder surveys secondary data analysis to establish the countries progress towards meeting the Millennium Development Goals, specifically related to water supply and sanitation.
Roll-out of ISO14001 and OHSAS18001 management systems to 2 industrial sites in South Africa, Confidential, South Africa (2004)	Project Manager responsible for undertaking ISO14001 training at two industrial sites. The project formed part of a global initiative to have several industrial sites throughout Africa and Europe ISO14001 certified.
Strategic Environmental Assessment (SEA) for the Port of Cape Town, National Ports Authority of South Africa, South Africa (2003)	Project Manager for this project and played a lead role in directing the course and outcome of the SEA. The SEA focussed on key environmental and social opportunities and constraint to the future long term development of the Port of Cape Town. A Sustainability Framework was developed to address key opportunities and constraints and to set up long terms monitoring programs. A key component of this study was to understand the Port-City linkages and developing mechanisms to ensure that port planning was supported by city planning and visa-versa.
Strategic Environmental Assessment (SEA) for the Port of Richards Bay, National Ports Authority of South Africa, South Africa (2003)	Project Adviser for this project and played a lead role in directing the course and outcome of the SEA. The SEA focussed on key environmental and social opportunities and constraint to the future long term development of the Port of Cape Town. A Sustainability Framework was developed to address key opportunities and constraints and to set up long terms monitoring programs. A key component of this study was to understand the Port-City linkages and developing mechanisms to ensure that port

	planning was supported by city planning and visa-versa.
E&S Due Diligence of the Phase 2 Maputo Port Revitalisation and Rehabilitation Project, Standard Corporate Merchant Bank, Mozambique (2003)	Environmental Adviser to the Standard Corporate Merchant Bank for the review of the EIA and Risk Assessment studies undertaken for the Phase 2 Maputo Port Revitalisation and Rehabilitation Project. The EIA was reviewed against the Mozambican and International Best Practice guidelines and detailed recommendation made on how to manage the environmental risks associated with the revitalisation project.
National Oil Spill Contingency Plan for Cameroon, funded by the World Bank, Cameroon Government, Cameroon (2003)	Part of the team that compiled a comprehensive Oil Spill Contingency Plan for Cameroon (OSCP). The OSCP form a core component of the Chad Cameroon Pipeline and included contingency plans for both on land and marine based spills. The OSCP was compiled according to the IPEACA guidelines and was reviewed by the World Bank.
EIA/SEA Capacity Building, Environmental Public Authority (EPA), State of Kuwait (2003)	Lead facilitator for a 2 day training course on SEA and EIA for the Environmental Public Authority (EPA) of the State of Kuwait.
Training Workshop on Strategic Environmental Assessment for South Eastern Africa and the Western Indian Ocean Island States, SEACAM, Mozambique (2003)	Lead course facilitator for the SEA training course funded by SEACAM. The training course included the principles of SEA, SEA process and case studies of SEA's in Southern Africa.
Improving the Effectiveness of EIA and the Potential of SEA in Southern Africa: Case Study on SEA of the National Commercial Ports Policy and SEA for the Port of Cape Town, World Bank/SAIEA, Namibia (2003)	Presenter of two case studies on SEA at a regional workshop funded by the World Bank and SAIEA.
Environmental Impact Assessment for the Eskom SABRE-GEN wind turbine test facility, Eskom, South Africa (2002)	Project Manager for the EIA. The EIA included stakeholder engagement throughout the process and included the following specialist studies: visual assessment, bird strike modelling and noise assessment.
Strategic Environmental Assessment: Scoping Phase Port of Richards Bay, National Ports Authority of South Africa, South Africa (2002)	Project Leader and integrative writer for the Scoping Phase of the SEA for the Port of Richards Bay. This phase included detailed stakeholder consultation to identify opportunities and constraints to long term port development at the Port of Richards Bay.
White Paper on National Commercial Ports Policy, National Ports Authority, South Africa 2002	Lead reviewer of the White Paper on National Commercial Ports Policy for South Africa. The review focussed on the integration of environmental and social issues into the port planning process. Mr Heather-Clark made a formal submission and presentation to the Portfolio Committee on Transport in the South African Parliament.

Environmental Liability and Risk Assessment for the Multi-Purpose Terminal at the Port of Saldanha, National Ports Operations, South Africa (2002)	Project Manager for the project. The purpose of the project was to identify key environmental risks associate with the material handling at the Multi-Purpose Terminal at the Port of Saldanha.
Environmental Overview of South Africa's major ports with special reference to future container terminal development, National Ports Authority Container Terminal Strategy, National Ports Authority, South Africa (2002)	Project Manager for the comparative assessment of the relative environmental sensitivity of the seven commercial ports in South Africa with reference to future container terminal development. The study included a detail review of secondary environmental information of all the ports, the identification of specific environmental criteria and the use of these criteria to rank each port in terms of its sensitivity to future container terminal development.
Review of the EIA undertaken for the Maputo Port Privatisation and Rehabilitation Project, Development Bank of Southern Africa (DBSA), South Africa (2002)	Environmental Adviser to the Development Bank of Southern Africa to review the Phase 1 EIA for the Maputo Port Privatisation and Rehabilitation Project. The review was undertaken against the Mozambican EIA Regulations and International Best Practice.
Oil Spill Contingency Plan, Agip Angola oil operations, Angola, (2002)	Team member of the team to develop an oil spill contingency plan according to the IPEICA International Guidelines.
Ecologically Sustainable Industrial Development Programme, United Nations Industrial Development Organisation (UNIDO), Tanzania (2002)	Team member of the project team appointed to review the Industrial Development Strategy for Industrial Development in Tanzania. The focus of the project was to integrate environmental and social issues into the programme.
Environmental Audit and Assessment of the Socio-economic Impacts of the Trans-Kgalagadi Highway, Botswana, Development Bank of Southern Africa, Botswana (2002)	Lead reviewer of the EIA and EMP implementation for the Trans-Kalagadi corridor in Botswana. The review included site visits, detailed interviews and review of secondary data and records.
World Bank EIA Project Management Training Course, World Bank/SAIEA, Zambia (2002)	Lead facilitator for the 5 day EIA Project Management Training Course. The course was presented to 20 African delegates from southern Africa. The course focused on the practical aspects of EIA project management including budgeting and scheduling an EIA, contract negotiations with clients, managing specialist studies, managing the public participation phase and compiling an integrated EIA report. The course formed part of a Southern Africa capacity building initiative lead by the SAIEA.
Environmental screening study for the establishment of a deep-water port at Ponta Dobela, Confidential Client, Mozambique (2001)	Team member of the project team who undertook a screening study to identify environmental, social and economic issues and show stoppers associated with the development of a deep-water port on the coast on Mozambique.
ESIA of the proposed seismic survey in licence area 2814a on the continental shelf of Namibia, Shell Exploration and Production Namibia B.V., Namibia (2001)	Team member of the ESIA for the offshore seismic exploration project. The ESIA included all issues associated with seismic surveys including seismic noise impacts on marine mammals, oil spill modelling and general environmental management issues.

CURRICULUM VITAE STUART HEATHER-CLARK

Environmental Impact Review for the abandonment of the Cuntala Well Protector Platform off the coast of Angola (Block 2), Texaco Panama Inc., Angola (2001)	Team member of the project team who developed a decommissioning plan for a well protector platform off the coast of Angola.
Legal, Technical and Economic Feasibility Study for the Commercialisation of the SSF Association Milnerton Tank Farm and its links to the Port of Cape Town, SFF, Cape Town (2001)	Project Manager for this project.
ESIA of the Phase 2 expansion of the Mozal Aluminium Smelter and Matola Port Terminal in Maputo, BHP Billiton, Mozambique (2000-2001)	Project Manager and integrative writer for this ESIA. The EIA included an assessment of the expansion of the port terminal at the Port of Matola and a review of the Phase 2 expansion of the aluminium smelter. All reports together with the EIA process were reviewed and approved by the International Finance Corporation (IFC).
Scoping Phase of the Environmental Impact Assessment for the expansion of the Container Terminal at the Port of Cape Town, Portnet, South Africa (2000)	Project Manager for the EIA for the expansion of the container terminal at the Port of Cape Town. The project included the dredging of 1 million m3 dredge material to provide fill for the expansion of the port. Specialist studies that were required included coastal dynamic modelling, hydrodynamic modelling to assess water quality issues associated with dredging, marine archaeological issues, marine ecology issues, traffic, visual and noise.
Strategic Integrated Port Planning, Port of Saldanha, Transnet (1998)	Project Manager for the Strategic Integrated Port Planning process for the Port of Saldanha. The process culminated in the first Port Development Framework for the Port of Saldanha which integrated environmental and social issues into the port planning process. It included the identification and inclusion of environmental and social opportunities and constraints into the future port planning and development.
Environmental Impact Assessment for the PPC Slag Grinding Mill within the Saldanha Steel Complex, PPC (1998)	Project Manager for the EIA for PPC slag grinding mill. The EIA included a number of specialist studies and comprehensive stakeholder engagement.

MEMBERSHIPS	
CEAPSA	Certified as an Environmental Practitioner with the Interim Certification Board for Environmental Assessment Practitioners of South Africa (2006)
IAIAsa	Member of the International Association for Impact Assessment South Africa
IAIA International	Member of the International Association for Impact Assessment

PUBLICATIONS	
	Sep 2007: Co-author of case study for IIEDs 'User Guide' to effective tools and methods for integrating environment and development. South African case study: Role of environmental and social screening in informing the conceptual design and planning of large-scale projects in the pre-feasibility stage.
	Aug 2003: Author of a case study on the SEA for the Port of Cape Town, contained in "The Status and Potential of Strategic Environmental Assessment" by Barry Dalal-Clayton and Barry Saddler, DRAFT 17 September 2003.
	March 2002: Strategic Integrated Port Planning: Moving from EIA to SEA. International Conference on Coastal Zone Management and Development, Kuwait 18 to 20 March 2002.
	Nov 2000: Sustainable Port Development: Report on the preparatory seminar for Africa. 7th International Conference of the International Association for Cities and Ports, Marseilles – France.
	Mar 2000: The development of Strategic Environmental Assessment in South Africa: Journal of Impact Assessment and Project Appraisal, Vol 18, Number 3, pg 217-223. September 2000.
	April 1999: Integrating environmental opportunities and constraints into Port Planning, Development and Operation. 5th International Conference on Coastal and Port Engineering in Developing Countries, Cape Town, 19 to 23 April 1999.

CURRICULUM VITAE

NICHOLAS ARNOTT

ENVIRONMENTAL CONSULTANT

Environmental Management, Planning and Approvals, South Africa

QUALIFICATIONS

Pr.Sci.Nat.	2016	Professional Natural Scientist (Environmental Science) with the South African Council for Natural Scientific Professions
BSc (Hons)	2005	Earth and Geographical Sciences (Environmental Management)
BSc	2004	Earth and Geographical Sciences, Zoology

EXPERTISE

- Environmental Impact Assessment
- Environmental Management Programme
- Public Participation
- Environmental compliance & monitoring
- Management of specialists

During his time at SLR, Nicholas has been responsible for undertaking environmental assessment processes for various projects relating to the mining, oil & gas, roads and related infrastructure, housing and industrial sectors. He has been involved in a number of projects in South Africa and has experience working in the Democratic Republic of Congo (DRC), Zambia and Zimbabwe.

He has expertise in a wide range of environmental disciplines, including Environmental Impact Assessments (EIA), Environmental Management Plans / Programmes (EMP), Basic Assessment Reports, Maintenance Management Plans (MMP), Environmental Auditing & Monitoring, Section 24(G) Rectification Applications and Public Consultation & Facilitation.

PROJECTS

	Mining and Minerals
De Beers Marine (Pty) Ltd – Prospecting Right application for offshore marine Diamonds in Sea Concession 6C, West Coast, South Africa (Current)	Environmental Impact Assessment (EIA) process for the proposed offshore Bulk Sampling operations in the Sea Concession 6C, off the West Coast of South Africa. Nicholas is the project manager and is responsible for the compilation of the Scoping and Environmental Impact Reports, undertaking of the required public participation process and management of the appointed specialists.
Bilboes Holdings (PVt) – Proposed Isabella, McCays and Bubi Sulphide Gold Project, Zimbabwe (Current)	Environmental and Social Impact Assessment (ESIA) for the proposed expansion of an existing gold mine complex located in Zimbabwe. Nicholas is the project assistant and compiled the Scoping Report, assisted with the undertaking of the required public participation process and management of the appointed specialists.

Copper Tree Minerals – Proposed Kitwe Tailings Retreatment Project, Zambia (Current)	ESIA for the proposed retreatment of historical tailings dumps located within the town of Kitwe, Zambia. Nicholas is the project manager for the ESIA phase and is responsible for the compilation of the ESIA Report, undertaking of the required public participation process and management of the appointed specialists.
De Beers Marine (Pty) Ltd – Prospecting Right application for offshore marine Diamonds in Sea Concession 6C, West Coast, South Africa (2018)	Basic Assessment process for the proposed offshore prospecting operations in the Sea Concession 6C, off the West Coast of South Africa. Nicholas compiled the Basic Assessment Report (including EMPr), undertook the required public participation process and managed the appointed specialists.
Velddrift Salt Company (Pty) Ltd –Salt mine, Velddrift, South Africa (2018)	Update the Financial Provision for the salt mine on Portion 69 of Farm 110 near Velddrift, Western Cape, South Africa. Nicholas undertook the update of the existing financial provision and prepared the assessment report.
Impala Platinum Limited Unincorporated Joint Venture – EMP Performance Assessment and Closure Liability Estimate for Prospecting Operations (2017)	EMP Performance Assessment and Closure Liability Estimate for the Klipgatkop 115-JQ prospecting operations. Nicholas was the project manager and compiled the EMP Performance Assessment and Closure Liability Estimate reports.
Belton Park Trading 127 (Pty) Ltd – Mining Right application for offshore marine Diamonds in Sea Concession 2C, West Coast, South Africa (2016 - 2017)	EIA process for the proposed offshore mining of marine diamonds in the Sea Concession 2C, off the West Coast of South Africa. Nicholas compiled the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
Belton Park Trading 127 (Pty) Ltd – Marine Sediment Sampling Activities in Sea Concessions 2C – 5C, West Coast (2014 - 2015)	Basic Assessment process for the proposed drill and bulk sampling of marine sediments in Sea Concessions 2C, 3C, 4C and 5C, off the West Coast of South Africa. Nicholas compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
Aquarius Platinum (SA) (Pty) Ltd – Prospecting rights application on the Farms Chieftains Plain 46-JT and Walhalla 1-JT (2014)	Environmental Management Programme (EMP) for the proposed prospecting activities to be undertaken on the Farm Chieftains Plain 46-JT and Walhalla 1-JT. Nicholas was the project manager and compiled the EMP for both projects.
Aquarius Platinum (SA) (Pty) Ltd – Proposed Extension of the K5 Upper Underground Mining Area (2014)	EIA amendment process for the existing K5 Upper Mining Right to provide for the extension of the K5 Upper underground mining area. Based on the strong public reaction to the project, AQPSA took the decision to place the project on hold. Nicholas was the project manager and undertook the initial public participation process.

Banro Corporation - Proposed Namoya Gold Mining Project, Maniema, DRC (2013)	ESIA for the proposed construction of a greenfield gold mine located in the DRC. Nicholas was the project manager and compiled the ESIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
Aquarius Platinum (SA) (Pty) Ltd – Kroondal and Marikana EMP Consolidation (2013 - 2015)	Consolidation of the existing approved EMPs for the Kroondal and Marikana Platinum Mines, located in the North West Province. Nicholas was the project manager and compiled of the Consolidated EIA Report (including EMP) for each operation and managed the appointed specialists.
Aquarius Platinum (SA) (Pty) Ltd – WULA for the proposed extension of Everest Platinum Mine (2011 - 2012)	Water Use License Application (WULA) process for the proposed expansion of the Everest Platinum Mine, located in Mpumalanga. Nicholas assisted in the compilation of the necessary WULA documentation, including the Integrated Water and Waste Management Plan (IWWMP) for the project.
Aquarius Platinum (SA) (Pty) Ltd – Proposed Extension of Everest Platinum Mine (2011 - 2012)	EIA process for the proposed expansion of the Everest Platinum Mine, located in Mpumalanga. Nicholas was the project manager and compiled of the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
Afplats (Pty) Ltd – EMP Performance Assessment for Prospecting Operations (2011)	EMP Performance Assessment for the Wolwekraal 408-JQ and Kareepoort 407-JQ prospecting operations. Nicholas was the project manager and compiled the EMP Performance Assessment reports.
Aquarius Platinum (SA) (Pty) Ltd – Re-assessment of the Financial Provision for Closure for Everest Platinum Mine (2011)	Annual re-assessment of the closure cost estimate for the Everest Platinum Mine. Nicholas was the project manager and compiled the annual review of the mines Financial Provision for Closure for 2011.
Leeuw Mining and Exploration (Pty) Ltd – Proposed Underground Coal Mine (2011)	EIA process for the proposed underground coal mine located near Utrecht, Kwa-Zulu Natal. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
	Oil and Gas
PGS Exploration (UK) Limited – Reconnaissance Permit Application to undertake a 2D and 3D seismic surveys offshore West Coast South Africa (2018)	EMP process for the proposal to undertake 2D and 3D speculative seismic surveys offshore of the West Coast, South Africa. Nicholas was the project manager and compiled the EMP report, undertook the required public participation process and managed the appointed specialists.

PGS Exploration (UK) Ltd – 2D and 3D seismic surveys compliance, South and East Coasts, South Africa (2015-2016)	EMP Compliance and audit services for speculative 2D and 3D seismic surveys off the South and East Coasts of South Africa. Nicholas' role included managing the audit process and compiling the survey close-out reports, which outlined the implementation of the EMP (compliance) and highlighted any problems and non-compliance issues that arose during each survey.
PGS Exploration (UK) Limited – Reconnaissance Permit Application Amendment to undertake a 3D seismic survey offshore KwaZulu-Natal, South Africa (2018)	EMP Amendment process for the proposal to undertake a 3D speculative seismic survey offshore of KwaZulu-Natal, South Africa. Nicholas was the project manager and compiled the Amended EMP report, undertook the required public participation process and managed the appointed specialists.
PGS Exploration (UK) Limited – Reconnaissance Permit Application to undertake 2D and 3D seismic surveys, South Africa (2017)	EMP process for a Reconnaissance Permit Application to undertake 2D and 3D speculative seismic surveys of the East Coast, South Africa. Nicholas was the project manager and compiled the EMP report, undertook the required public participation process and managed the appointed specialists.
Rhino Oil & Gas Exploration South Africa (Pty) Ltd – Proposed Exploration Activities in offshore Licence Blocks 3617 and 3717, South-West coast of South Africa (2015 -2016)	EIA process for the proposed offshore exploration activities in Licence Blocks 3617 and 3717, South-West coast of South Africa. Nicholas assisted in the compilation of the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
Rhino Oil & Gas Exploration South Africa (Pty) Ltd – Proposed Exploration Activities in Various Inshore Licence Blocks, South-West coast of South Africa (2015 -2016)	EIA process for the proposed exploration activities in various inshore Licence Blocks, South-West coast of South Africa. Nicholas assisted in the compilation of the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
Total E & P (SA) (Pty) Ltd - Proposed bathymetry survey and seabed sediment sampling in Block 11B/12B (2014 -2015)	EMP Addendum for an application to undertake sonar surveys and seabed sediment sampling as part of the approved exploration programme for License Block 11B/12B. Nicholas was the project manager and compiled the EMP report, undertook the required public participation process and managed the appointed specialists.
	Infrastructure – Roads
Aurecon South Africa (Pty) Ltd for the South African National Roads Agency SOC Limited - Upgrade of N1/4 and development of borrow pits (Current)	Basic Assessment process for the proposed upgrade of a 17 km stretch of the N1 Section 4 from Monument River (km 46.00) to Doornfontein (km 63.00), including the improvement of the Matjiesfontein intersection and development of additional borrow pits. Nicholas is the project manager and responsible for the compilation of the Basic Assessment Report (BAR), undertaking the required public participation process and managing the appointed specialists.

GIBB (Pty) Ltd for Western Cape Government (WCG): Department of Transport & Public Works - Swart River Bridge, South Africa (2016 - 2017)	Basic Assessment process for the proposed implementation of erosion protection measures along a section of the Swart River which is traversed by the TR 34, approximately 7 km north of Prince Albert. Nicholas was the project manager and compiled the Basic Assessment Report (BAR), undertook the required public participation process and managed the appointed specialist.
SMEC SA (Pty) Ltd for South African National Roads Agency SOC Ltd (SANRAL) - Proposed establishment of a Quarry, Ngquza Hill Local Municipality, Eastern Cape (2016 - ongoing)	EIA process for the proposed development of a quarry for the extraction of material for the construction of the Mthentu and Msikaba Bridges for the N2 Wild Coast Toll Highway. Nicholas compiled the Scoping and EIA Reports (including EMP), and project managed the required public participation process.
Hatch Goba (Pty) Ltd for WCG:DTPW- Maintenance Management Plan for flood damage repair of structures in the Ladismith West area (2016 - 2017)	Maintenance Management Plan (MMP) for the proposed repairs to road infrastructure at fourteen different sites that were damaged during flood events in the Ladismith West area situated between Ladismith and Montagu. Nicholas was the project manager and compiled the MMP, undertook the required public participation process and managed the appointed specialist.
ERO Engineers (Pty) Ltd for WCG:DTPW - Proposed Repair and Reseal of Main Road (MR) 233 to Langebaan (2015)	MMP for the proposed rehabilitation works of the MR 233 between the R 27 (km 6.80) and north of Langebaan (km 12.84). Nicholas was the project manager and compiled the MMP, undertook the required public participation process and managed the appointed specialist.
Ekurhuleni Metropolitan Municipality (Eastern Region) – Proposed Gauteng Road (P1894) (2007 - 2009)	EIA for the construction of a new road between Sam Smith Road (Tsakane) and Vlakfontein Road (Kwa-Thema), Ekurhuleni Metropolitan Municipality. Nicholas was the project manager and compiled the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
	Infrastructure – Water and Wastewater
BVI Consulting Engineers WC (Pty) Ltd for the City of Cape Town: Transport for Cape Town – Proposed upgrade of the Bayside Canal (2015 -Ongoing)	Basic Assessment process for the upgrade of the Bayside Canal Outfall System located in Tableview, Cape Town. Nicholas is the project manager and is responsible for compiling the BAR, undertaking the required public participation process and managing the appointed specialists.
Saldanha Bay Municipality - Maintenance Management Plans for the Bok and Mosselbank Rivers (2016 - 2017)	MMP for the proposed maintenance activities to be undertaken within the Bok and Mosselbank Rivers. Nicholas was the project manager, compiled the MMPs and undertook the required public participation process.

BVI Consulting Engineers WC (Pty) Ltd for the City of Cape Town: Transport for Cape Town – Proposed stormwater pipeline linking Sunningdale to the Big Bay stormwater outfall pipeline (2015 -2016)	Basic Assessment process for the construction of a new stormwater pipeline to route runoff from Sunningdale Phases 12A, 13 and 14 to the existing Big Bay Outfall pipeline located at the eastern boundary of the suburb of Big Bay. Nicholas was the project manager and compiled the BAR, undertook the required public participation process and managed the appointed specialists.
Arup - Proposed Sandspruit Rehabilitation for Stormwater Management of Melrose Arch, Sandton (2010)	Basic Assessment for the rehabilitation of the Sandspruit to facilitate the management of stormwater runoff emanating from the Melrose Arch precinct. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
	Infrastructure – Solid Waste
Energy Omega Oils (Pty) Ltd – Audit of Blackheath Waste Storage Facility (2017)	External audit of the Blackheath Waste Storage Facility in terms of the National Norms and Standards for the Storage of Waste (Government Notice No. 926 of 29 November 2013). Nicholas undertook and compiled the audit report.
Impala Platinum (Pty) Ltd - Proposed Central Salvage Yard (2011 - 2012)	Basic Assessment process and Waste Management License application for the proposed construction of a salvage yard, and associated activities, located at Impala Platinum's Rustenburg operations. Nicholas compiled the BAR (including EMP), undertook the required public participation and waste management license application processes and managed the appointed specialists.
	Power - Solar
SolarReserve South Africa (Pty) Ltd – Proposed Kalkaar CSP and Photovoltaic Plants, Free State (2014 -2015)	EIA process for the proposed construction of a Concentrated Solar Thermal Plant (CSP) and a Photovoltaic Plant, located in the Free State Province. Nicholas was the project manager and compiled of the Scoping and EIA Reports (including EMP) for both projects, undertook the required public participation process and managed the appointed specialists.
	Built Environment – Residential
Luna Trust - Proposed Subdivision of Erf 177476, St James (2017 – Ongoing)	Basic Assessment process for the subdivision of Erf 177476 into five separate portions with the intent to sell four of the subdivided portions to third-parties for residential use. Nicholas is the project manager and is responsible for compiling the BAR, undertaking the required public participation process and managing the appointed specialists.
Mountain View Estate Shareblock Company Limited - Proposed	EIA for a residential and aviation estate on the Farm Simonsview 490-JQ, and various portions of the Farms Kalkheuwel 493-JQ, Rhenosterspruit 495-JQ and Riverside 497-JQ, Gauteng and North West Province. Nicholas was the project manager and

Mountain View Estate (2009 - 2010)	compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
Lead Wood Development Company (Pty) Ltd - Proposed Leadwood Nature Estate (2008)	EIA for a residential and game estate on the Remainder of Portion 2 of The Farm Happyland 241-KT, Hoedspruit, Limpopo. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
Hayes Matkovich Developments (Pty) Ltd – Proposed Standerton Country Estate (2008)	EIA for a golf estate on the Portions of the Farms Grootverlangen 409-IS and Langerwyl 410-IS, Standerton, Mpumalanga. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
Sugar Creek Trading 33 (Pty) Ltd - Proposed Development of Zandspruit Estate (2007 -2008)	EIA for a residential, game and aviation estate on the Remainder of The Farm Happyland 241-KT, Hoedspruit, Limpopo. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
C.J.Irons CC - Taemane Residential Estate (2007)	Basic Assessment for the proposed residential estate located on a Part of the Remainder of Portion 52 of the Farm Garstfontein 374-JR, Pretoria, Gauteng. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
Riverspray Lifestyle Estate (Pty) Ltd - Proposed Riverspray Lifestyle Estate (2006)	EIA for a residential and lifestyle estate on bank of the Vaal River in Vanderbijlpark, Gauteng. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
	Built Environment – Recreation
South African National Parks (SANParks) - Proposed Preekstoel Boardwalk Within the West Coast National Park (2009)	Basic Assessment for the establishment of boardwalks in the Preekstoel section of the West Coast National Park, (SANParks). Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
SANParks - Construction of a Walkway and Suspension Bridges in the Tsitsikamma National Park (2008)	Basic Assessment for the establishment of a walkway and additional suspension bridges in the Tsitsikamma National Park, South Africa. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
	Other
City of Tshwane Metropolitan Municipality - Proposed Expansion of the Winterveld Cemetery (2007 - 2010)	Basic Assessment for the expansion of the existing Winterveld Cemetery located within the City of Tshwane Metropolitan Municipality. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.

City of Tshwane Metropolitan Municipality - Proposed Expansion of the Klipkruisfontein Cemetery (2007 - 2010)	Basic Assessment for the expansion of the existing Klipkruisfontein Cemetery located within the City of Tshwane Metropolitan Municipality. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
Tolplan (Pty) Ltd for SANRAL – Proposed Central Operations Centre (COC), Midrand (2009)	Basic Assessment for the proposed construction of the SANRAL COC Building. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
Erf5 Melrose Estate CC - Section 24G Rectification for a Roof Signboard (2008)	Rectification Application in terms of Section 24G (S24G) of the National Environmental Management Act, 1998 for the unlawful erection of a roof signboard on the corner of Juta and Eendracht Streets, Johannesburg. Nicholas was the project manager and compiled the Rectification Application (including EMP) and undertook the required public participation process.
Wideopen Leasing (Pty) Ltd – S24G Rectification for a Sky Sign, 78 Fox Street (2007)	Rectification Application in terms of S24G of the National Environmental Management Act, 1998 for the unlawful erection of a Sky Sign at 78 Fox Street, Johannesburg. Nicholas was the project manager and compiled the Rectification Application (including EMP) and undertook the required public participation process.

MEMBERSHIPS

International Association for Impact Assessment – South Africa (IAIAsa)	Member.

REUBEN MAROGA

ENVIRONMENTAL CONSULTANT

Environmental Management Planning & Approvals, South Africa

QUALIFICATIONS

BSc (Hons)	2016	Environmental Management
BSc	2015	Geology

EXPERTISE

- Environmental Permitting Process
- Water Use License Applications
- Public Participation Process
- Stakeholder Engagement

Reuben is an Environmental Consultant with SLR and has 3 years of experience within the environmental consulting field. In his 3 years of experience, Reuben has completed over 10 Basic Assessments as well as Amendment Applications undertaken in terms of the EIA Regulations, 2014. Prior to joining SLR, Reuben worked on environmental permitting processes of numerous large-scale renewable energy and infrastructure development projects, the majority of which are based in the Northern Cape and have been authorised by the relevant authorities.

PROJECTS

Lichtenburg Solar Energy Facilities (2020)	Undertook a Part 2 Amendment including report writing to include a Battery Energy Storage System (BESS) for three 100MW solar energy facilities near Lichtenburg, North West. Liaising with the commenting and competent authorities as well as stakeholders.
Sirius Solar PV Project Two (2020)	Undertook a Part 2 Amendment including report writing to include a Battery Energy Storage System (BESS) for the 75MW Sirius Solar PV Project Two near Upington, Northern Cape.
Geelstert Solar PV & Grid Connection Basic Assessments (2020)	Completed the Basic Assessment Reports as well as the Environmental Management Programmes (EMPr) for the two 125MW solar PV facilities and the grid connection of up to 220kV near Aggeneys, Northern Cape.
Richards Bay Gas-To-Power (2020)	Assisted in the compilation of the Motivation Report and Application for a Part 2 Amendment for a 450MW Gas-To-Power Facility near the Richards Bay Port, KwaZulu-Natal
Olifantshoek 132kV Power Line (2020)	Completed the Basic Assessment Process for the proposed Olifantshoek 132kV Power Line near Olifantshoek, Northern Cape.
Matla Power Station Reverse Osmosis Plant (2019 – 2020)	Completed the Basic Assessment Process for the construction, operation and decommissioning of a Reverse Osmosis Plant within the footprint of Matla Power Station near Kriel, Mpumalanga.

Naledi & Ngwedi (2019 – 2020)	Completed the Basic Assessment Process for two 100MW solar PV facilities near Upington, Northern Cape.
Khunab Solar Development (2019 – 2020)	Completed the Basic Assessment Process for four 75MW solar PV facilities near Upington, Northern Cape
Sirius Solar PV Project Three and Four (2019)	Completed the Basic Assessment Process for two 100MW solar PV facilities near Upington, Northern Cape
Wilmar Vegetable Oil Pipeline (2019 – 2020)	Completed the Basic Assessment Process (including the undertaking of the water use license application) for the construction and operation of a vegetable oil pipeline within the Richards Bay Port and Richards Bay Industrial Development Zone near Richards Bay, KwaZulu-Natal.
Decommissioning of Asbestos Landfill Site (2019 – 2020)	Completed the Basic Assessment Process (including the compilation of a Closure Plan) for a disused asbestos landfill site within the Kriel Power Station near Kriel, Mpumalanga.
Kriel Lime Plant Upgrade (2019 – 2020)	Completed the Basic Assessment Process for the construction and operation of a lime plant for Kriel Power Station near Kriel, Mpumalanga.
Aggeneys Solar Development (2019)	Completed the Basic Assessment Process for the two 100MW solar PV facilities and grid connection infrastructure for each PV facility near Aggeneys, Northern Cape