



Draft Environmental Management Programme (EMPr)

Proposed development of a 75 MW Solar Photovoltaic Facility (Gemsbok Solar PV5), near Kenhardt, Northern Cape Province

PART 2:

Generic Environmental Management Programme (EMPr) for the IPP Substation and Switching Station to support the Gemsbok Solar PV5 Facility

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1 INTRODUCTION AND PROJECT BACKGROUND

On 22 December 2020, Mulilo Total Coega (Pty) Ltd submitted a Bid (Reference Number: RM-TA-0180-002) in response to the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) Tender No: DMRE001/2020/21. The proposed project submitted consists of a dispatchable gas to power plant facility in the Coega Industrial Development Zone (IDZ) in the Eastern Cape near Port Elizabeth, and a non-dispatchable, Solar photovoltaic facility comprised of three previously authorized solar developments located north-east of Kenhardt, in the Northern Cape of South Africa. The non-dispatchable solar PV facilities are the subject of this report and consist of the following projects:

- Gemsbok Solar PV2 (Reference Numbers: 14/12/16/3/3/2/711 and 14/12/16/3/3/2/711/AM1);
- Gemsbok Solar PV5 (Reference Numbers: 14/12/16/3/3/2/843); and
- Gemsbok Solar PV6 (Reference Numbers: 14/12/16/3/3/2/844 and 14/12/16/3/3/2/844/AM1) (i.e. this application).

This report only focuses on the non-dispatchable solar PV facilities noted above, and does not include the gas to power plant in the Coega IDZ.

Following the evaluation of bids received under the RMIPPPP tender window, the Minister of Mineral Resources and Energy announced the eight Preferred Bidders on 18 March 2021. The proposed Mulilo Total Coega project was selected as a **Preferred Bidder** and as a result of the nature of the proposed project, it has been formally declared a Strategic Integrated Project (SIP) under SIP project No. 20 (Energy) Sub-Project (a). Emergency/Risk Mitigation Power Purchase Procurement Programme (2000MW): National as Gazetted in Government Gazette 43547, Government Notice 812 on 24 July 2020. The Applicant has received a letter of confirmation of SIP status from the relevant sector representative (i.e. SIP Coordinator). The proposed project must reach Financial Close by the end of July 2021 and should aim to connect to the grid by August 2022 (estimated). Therefore, construction of the proposed PV projects must take place as soon as possible.

Each solar PV power generation facility will have a capacity of 75 MW, and will include associated infrastructure i.e. various structures, buildings and electrical grid infrastructure (EGI) such as, but not limited to, power lines and on-site substations. The three proposed Solar PV facilities will connect to the national grid at the existing Eskom Nieuwehoop Main Transmission Substation (MTS). The proposed projects are located within the !Kheis Local Municipality, which falls within the ZF Mgcau District Municipality.

The proposed solar PV projects fall entirely within the Renewable Energy Development Zone (REDZ) 7 (i.e. Upington REDZ), that was Gazetted on 16 February 2018 in Government Gazette 41445, Government Notice (GN) 114. The location of the proposed project within a REDZ (specifically REDZ 7) supports the development of a large-scale renewable energy project.

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The proposed projects also fall within the Western EGI Corridor, one of the five EGI Corridors gazetted in February 2018, in Government Gazette 41445, GN 113. However, while Listed Activity 9 of Listing Notice 2 of the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) EIA Regulations (as amended) is not triggered, the fact that the proposed projects fall within the EGI Corridor is still important as it indicates that the proposed projects align with the strategic objectives of the country in terms of infrastructure placement.

Refer to Figure 1 for the overall locality of the Gemsbok Solar PV2, Gemsbok Solar PV5, and Gemsbok Solar PV6 projects, and associated infrastructure.

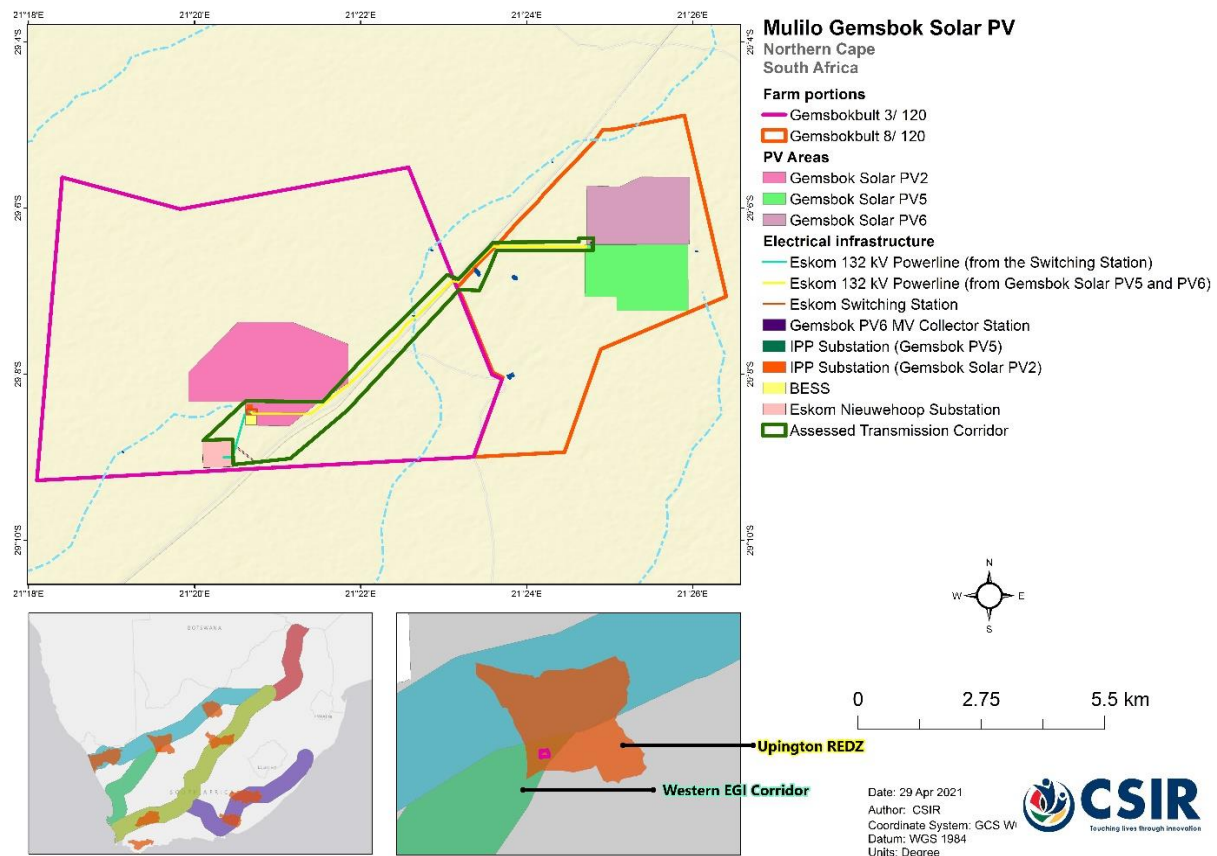


Figure 1: Locality of the Gemsbok Solar PV facilities, Electrical Grid Infrastructure and associated infrastructure

A full Scoping and Environmental Impact Assessment (EIA) process was undertaken for each of the Gemsbok Solar PV2, Gemsbok Solar PV5, and Gemsbok Solar PV6¹ projects over the period of 2014 to 2016. The appointed Environmental Assessment Practitioner (EAP) was the Council for Scientific and Industrial Research (CSIR). The proposed projects received Environmental Authorisation (EA) from the Department of Environmental Affairs (DEA) (now operating as the Department of Forestry, Fisheries and the Environment (DFFE)) in November 2015, September 2018 and November 2018 in terms of the NEMA EIA Regulations.

¹ The Gemsbok Solar PV2 project was originally commissioned as part of Phase 1 of the proposed development, which included a total of three PV facilities; whilst the Gemsbok Solar PV5 and Gemsbok Solar PV6 projects were commissioned as part of the second phase of the proposed development, which included a total of seven PV facilities.

Below is a summary of the EIA decision-making history for the three solar PV projects:

- **Gemsbok Solar PV2:** The original EA (Reference Number 14/12/16/3/3/2/711) for this project is dated 9 November 2015 and was valid for a period of 5 years. An application for an amendment to the original EA was submitted to the Competent Authority in June 2020 to extend the validity of the authorisation, change the preferred type of Energy Storage System and to change the contact details of the holder of the EA (Reference Number 14/12/16/3/3/2/711/AM1). The Amendment to the EA was granted in July 2020 (dated 23 July 2020, Reference Number 14/12/16/3/3/2/711/AM1). The EA is valid until 9 November 2025.
- **Gemsbok Solar PV5:** The Original EA dated 30 August 2016 was refused. An appeal process was thereafter followed. An Appeal decision dated 28 July 2017 was made, and based on this decision, the Competent Authority decided to grant authorisation. The Gemsbok Solar PV5 project then received EA on 19 November 2018 (Reference Number 14/12/16/3/3/2/843). A subsequent appeal was lodged against Condition 35 of the EA on 19 December 2018. Based on the review of the appeal decision as issued by the Minister on 7 June 2019, the Competent Authority, in terms of Chapter 5 of the 2014 NEMA EIA Regulations, decided to amend the EA dated 19 November 2018 by removing condition 35. This letter from the Competent Authority is dated 19 July 2019 with the following Reference Number: 14/12/16/3/3/2/843. The EA is valid for a period of 5 years i.e. until 19 November 2023.
- **Gemsbok Solar PV6:** The Original EA dated 30 August 2016 was refused. An appeal process was thereafter followed. An Appeal decision dated 7 June 2018 was made, and based on this decision, the Competent Authority decided to grant authorisation. The Gemsbok Solar PV6 project then received EA on 10 September 2018 (Reference Number 14/12/16/3/3/2/844). A subsequent Appeal Decision was made on 17 January 2019. Based on the appeal decision dated 17 January 2019, the Competent Authority decided to amend the EA dated 10 September 2018 by removing Condition 34. This letter from the Competent Authority is dated 11 February 2019 with the following Reference Number: 14/12/16/3/3/2/844/AM1. The EA is valid for a period of 5 years i.e. until 10 September 2023.

The Applicants for the Gemsbok Solar PV2, Gemsbok Solar PV5, and Gemsbok Solar PV6 projects at the time of undertaking the EIA Process, and as captured in the project EAs listed above, was **Gemsbok Solar PV2 (Pty) Ltd**, **Gemsbok Solar PV5 (Pty) Ltd**, and **Gemsbok Solar PV6 (Pty) Ltd**, respectively. However, since the project has been bid as part of the RMIPPPP under the name of **Mulilo Total Coega (Pty) Ltd**, the name of the holder of the EA needs to be changed accordingly. Thus, a non-substantive Application for Amendment to the EAs was submitted to the DFFE on 15 April 2021 to apply to change the Project Applicant and transfer the rights and obligations to **Mulilo Total Coega (Pty) Ltd**. The DFFE will make a decision on the application within a period of 30-days.

The Project Names, Reference Numbers, Project Applicants, and respective farm portions affected by the proposed PV facilities, EGI and associated infrastructure are shown in Table 1 below.

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Table 1: Project Names, Reference Numbers, Applicants and Affected Farm Portions.

Project Name	Reference Number	Original and Amended Project Applicant	Affected Farm Portions (PV facility, EGI and Associated Infrastructure)
Gemsbok Solar PV2	<ul style="list-style-type: none"> ▪ 14/12/16/3/3/2/711 ▪ 14/12/16/3/3/2/711/AM1 	<ul style="list-style-type: none"> ▪ <u>Original:</u> Gemsbok Solar PV2 (Pty) Ltd ▪ <u>Amended:</u> Mulilo Total Coega (Pty) Ltd 	<ul style="list-style-type: none"> ▪ Remaining Extent of Portion 3 (Rooidam) of the Farm Gemsbok Bult No. 120
Gemsbok Solar PV5	<ul style="list-style-type: none"> ▪ 14/12/16/3/3/2/843 	<ul style="list-style-type: none"> ▪ <u>Original:</u> Gemsbok Solar PV5 (Pty) Ltd ▪ <u>Amended:</u> Mulilo Total Coega (Pty) Ltd 	<ul style="list-style-type: none"> ▪ Remaining Extent of Portion 8 (Rooidam) (a Portion of Portion 3) of the Farm Gemsbok Bult No. 120 ▪ Remaining Extent of Portion 3 (Rooidam) of the Farm Gemsbok Bult No. 120
Gemsbok Solar PV6	<ul style="list-style-type: none"> ▪ 14/12/16/3/3/2/844 ▪ 14/12/16/3/3/2/844/AM1 	<ul style="list-style-type: none"> ▪ <u>Original:</u> Gemsbok Solar PV6 (Pty) Ltd ▪ <u>Amended:</u> Mulilo Total Coega (Pty) Ltd 	<ul style="list-style-type: none"> ▪ Remaining Extent of Portion 8 (Rooidam) (a Portion of Portion 3) of the Farm Gemsbok Bult No. 120 ▪ Remaining Extent of Portion 3 (Rooidam) of the Farm Gemsbok Bult No. 120

This report specifically focuses on the Gemsbok Solar PV5 Facility (indicated in bold font in Table 1). Separate reports have been compiled for the Gemsbok Solar PV2 and Gemsbok Solar PV6 Facilities.

1.1 NEED FOR AN EMPr

Condition 15 of the EA for Gemsbok Solar PV5 (14/12/16/3/3/2/843) states the following:

- *“The Environmental Management Programme (EMPr) submitted as part of the EIAr is not approved and must be amended to include measures as dictated by the final site lay-out map and micro-siting, and the provisions of this environmental authorisation. The EMPr must be made available for comments by registered Interested and Affected Parties and the holder of this environmental authorisation must consider such comments. Once amended, the final EMPr must be submitted to the Department for written approval prior to commencement of the activity. Once approved the EMPr must be implemented and adhered to”.*

Therefore, since the proposed project is part of a suite of developments that is declared a SIP, as described above, and since construction of the proposed facilities needs to commence as soon as possible, the EMPr for Gemsbok Solar PV5 project needs to be approved by the DFFE before financial close can be reached and construction commences. It was confirmed with the DFFE via email dated 25 February 2021, that the EMPr can be made available to registered Interested and Affected Parties (I&APs) for a 30-day comment period and that the DFFE will take 30 days to make a decision. It is understood that such approval will also be expedited considering that the proposed project is categorized as a SIP.

Furthermore, Condition 13 of the EA for Gemsbok Solar PV5 (14/12/16/3/3/2/843) states the following:

- *“A copy of the final development layout map must be made available for comments by registered Interested and Affected Parties and the holder of this environmental authorisation must consider such comments. Once amended, the final development layout map must be submitted to the Department for written approval prior to commencement of the activity. All available information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g. roads”.*

In order to comply with the above, the final development layout map has been included as Appendix B of Part 1 of the EMPr.

This EMPr for the Gemsbok Solar PV5 project consists of three parts, each of which covers specific project aspects and infrastructure, as indicated in Figure 2 below. This serves as **Part 2 of the EMPr, which covers the on-site substation (i.e. Independent Power Producer (IPP) Substation and Switching Station) for Gemsbok Solar PV5.**

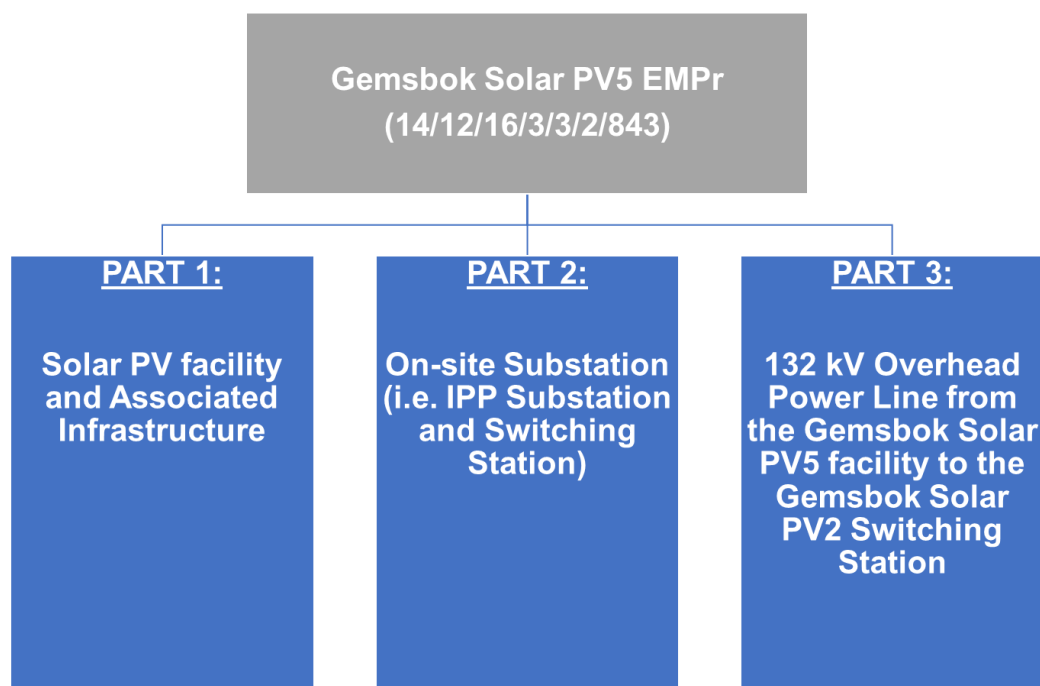


Figure 2: Parts of the Gemsbok Solar PV5 EMPr

This EMPr and final development layout map is therefore currently being released to I&APs, stakeholders and Organs of State for a 30-day review period extending from 30 April 2021 to 31 May 2021. Comments received from stakeholders during this aforementioned review period will be incorporated into the EMPr, where relevant and required. Following the incorporation of comments from I&APs, stakeholders and Organs of State, this EMPr and final development layout map will be submitted to the DFFE for approval in order to comply with Conditions 12 and 14 of the EA. Once approved, the EMPr is intended as a “living” document and should continue

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to be updated regularly, as needed, following the relevant EMPr update requirements of the EA and the 2014 NEMA EIA Regulations (as amended).

1.2 AUTHORS OF THE EMPr

This EMPr is based on the original EMPr that was compiled in March 2015 as part of the EIA Process. The authors of the original EMPr are noted in Table 2 below. All updates to the EMPr have been made by the current Environmental Assessment Practitioners (Paul Lochner, Lizande Kellerman, Kelly Stroebel and Rohaida Abed) and Ms. Ina Venter, the appointed Biodiversity Specialist, as indicated in Table 2. The details and expertise of the Environmental Assessment Practitioners and the specialists are provided in Appendix A of Part 1 of the EMPr.

Table 2: Details of the EMPr Update Team

NAME	ORGANISATION	ROLE
EIA TEAM OF THE ORIGINAL EIA (MARCH 2015)		
Environmental Assessment Practitioners		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Minnelise Levendal	CSIR	Project Leader
Surina Brink (Laurie)	CSIR ²	Project Manager
Specialists		
Lukas Niemand	Pachnoda Consulting CC and associates	Ecological Impact Assessment (including fauna and avifauna). Pachnoda Consulting compiled the overall Ecological Impact Assessment with inputs from Kyllinga Consulting as indicated below)
Ina Venter	Kyllinga Consulting (sub-contracted by Pachnoda Consulting CC)	Vegetation and Aquatic Impact Assessment
Henry Holland	Private	Visual Impact Assessment
Dr. Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Dr. John Almond	Natura Viva cc	Desktop Palaeontological Impact Assessment
Johann Lanz	Private	Soils and Agricultural Potential Assessment
Rudolph du Toit	CSIR ²	Socio-Economic Impact Assessment
Technical Studies to inform the EIA Process		
P. S. van der Merwe and A. J. Otto	MESA Solutions	Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI)
EIA TEAM OF THE EMPr UPDATE (APRIL 2021)		
Environmental Assessment Practitioners		
Paul Lochner (<i>Registered EAP (2019/745)</i>)	CSIR	Project Leader
Kelly Stroebel (<i>Cand.Sci.Nat</i>)	CSIR	Project Manager
Rohaida Abed (<i>Pr.Sci.Nat.</i>)	CSIR	Project Member
Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Project Specialist
Abulele Adams (<i>Pr.Sci.Nat.</i>)	CSIR	Project Mapping
Specialists		
Ina Venter	Kyllinga Consulting	Vegetation and Aquatic Specialist

² This project team member is no longer with the CSIR.

1.3 PROJECT DESCRIPTION

As indicated above, the Gemsbok Solar PV5 project will generate 75 MW Alternating Current (AC) of electricity. This project will connect to the Eskom Nieuwehoop MTS via a 132 kV overhead transmission line via the Gemsbok Solar PV2 project. The proposed solar facility and associated infrastructure requires a development area of approximately 220 ha. The site will comprise of the following components:

- Solar Field:
 - Solar Arrays: rows of PV Modules; Single Axis Tracking structures at roughly 3m height aligned North South which are drilled and piled into the ground; Solar Module Mounting structures comprised of Galvanised Steel and Aluminium; and Solar measuring station.
 - Building infrastructure: Offices; Operational and Maintenance control centre; Warehouse/workshop; Ablution facilities for operations with permeant septic tank; Inverter stations with associated combiner boxes; MV transformers; cabling; scada weather stations; store rooms; Converter station; On-site worker's accommodation camp, Substation building; and Guard House.
- Associated infrastructure
 - 132 kV overhead transmission line (Steel Monopole design); On-site 132/33kV IPP Substation to be constructed and operated by the IPP, back-to-back with a 132kV 3 bay Switching Station to be constructed by the IPP and handed over to Eskom for operations; Additional 132kV Feeder Bay at the Gemsbok Solar PV2 Switching Station; Additional feeder bay and Busbar at the Eskom Nieuwehoop MTS or extensions of the existing infrastructure; A new 400/132kV transformer bay at the Eskom Nieuwehoop MTS; 400/132kV Transformer at the Eskom Nieuwehoop MTS; Extension of the 400kV busbar; Extension of the 132kV Busbar; 33 kV internal transmission lines - overhead powerlines and underground cables; <8 m wide internal access road; Fencing; Temporary work area during the construction phase; Main Gate, Parking area; Laydown areas; Canteen; Chemical based temporary ablutions for construction; Water storage tanks, Boundary fence (electrical or barbed wire) around the PV facility; Stormwater infrastructure including storm water channels exceeding 1 km in length; and Water pipelines.

A high level conceptual diagram, indicating the key electrical components and overall linkages between the Gemsbok Solar PV2, Gemsbok Solar PV5 and Gemsbok Solar PV6 projects, is provided in Figure 3.

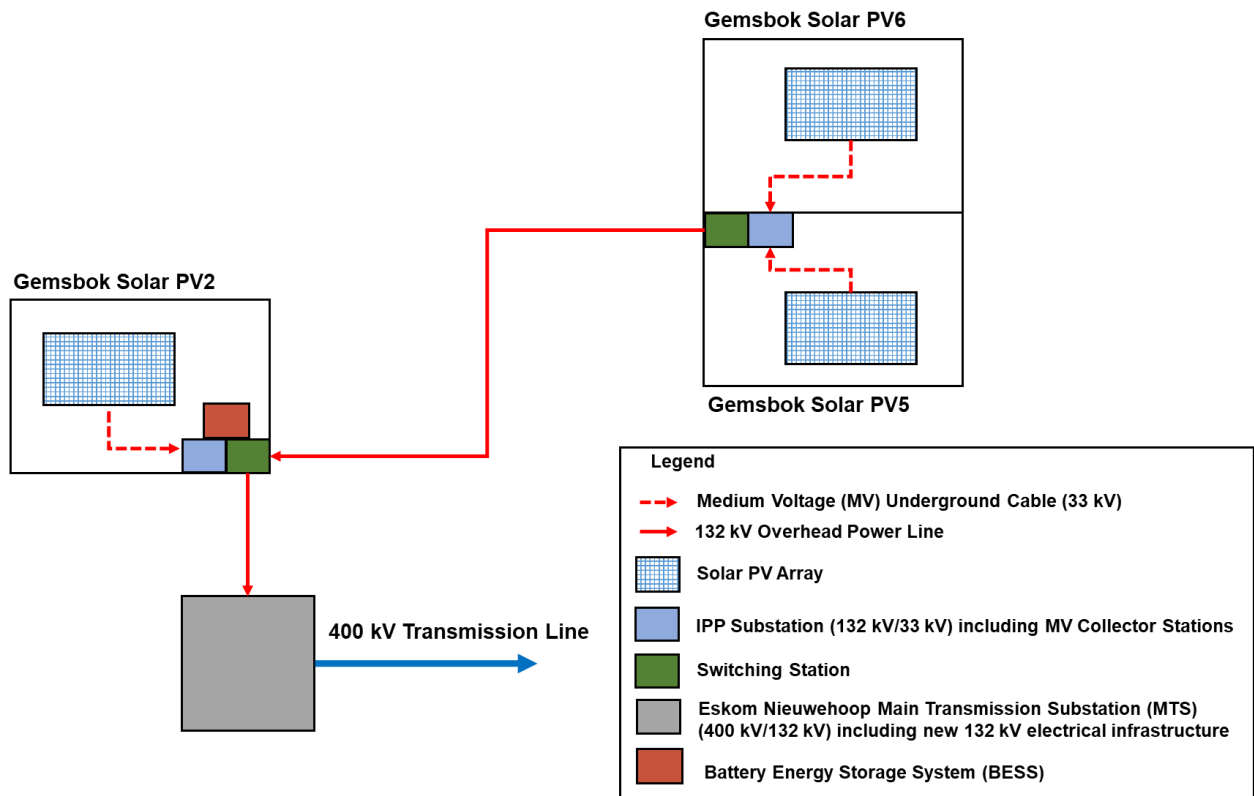


Figure 3: High-level conceptual diagram showing the key electrical components and linkages between the Gemsbok Solar PV2, Gemsbok Solar PV5 and Gemsbok Solar PV6 projects.

This part of the EMPr (i.e. Part 2) only addresses the on-site substation (i.e. IPP Substation and Switching Station) at the PV5 site. Refer to Appendix B of this EMPr (i.e. Part 2 of the EMPr, this document) for an illustration of the on-site substation and components.

The project can be divided into three main phases:

- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and, where applicable, has been assessed in the specialist studies undertaken during the EIA Phase. Management and mitigation measures required to address all the impacts associated with the proposed on-site substation are included within this EMPr. Construction is planned to start in August 2021, and will take up to 18 months to be completed.

The main activities that will form part of the construction phase for the on-site substation are:

- Removal of vegetation for the proposed infrastructure, where necessary;
- Excavations for infrastructure and associated infrastructure;
- Establishment of a laydown area for equipment;
- Stockpiling of topsoil and cleared vegetation, where necessary;
- Creation of employment opportunities;
- Transportation of material and equipment to site, and personnel to and from site; and
- Construction of the on-site substation and additional infrastructure.

The following activities will occur during the operational phase for the on-site substation:

- The distribution and transmission of electricity generated by the proposed solar facility to the Eskom Nieuwehoop MTS; and
- Maintenance of the infrastructure.

During the life span of the proposed project (approximately 20 years each), on-going maintenance will be required on a scheduled basis.

Should it be decided not to extend the operational lifespan of the project beyond 20 years, the project will be decommissioned. The main aim of decommissioning is to return the land to its original, pre-construction condition, where possible.

1.4 ENVIRONMENTAL SENSITIVITIES

The following key recommendations were made within the various specialist studies undertaken during the EIA Phase:

- Apply appropriate buffer zones to sensitive habitat types and sensitive features:
 - 100 m from National Freshwater Ecosystem Protection Area (NFEPA) rivers and wetlands (National priority);
 - 32 m from all other major watercourses (e.g. *Prosopis glandulosa*) where waterbirds could congregate when surface water is present;
 - 20 m from minor drainage lines;
 - 100 m from watering points and dams;
 - 100 m from prominent quartz outcrops and koppies and *Aloe dichotoma* outcrops;
 - 20 m from Protected trees (e.g. *Aloe dichotoma*, *Boscia albitrunca* and *B. foetida*);
- No development can be allowed to take place within the High sensitivity areas or buffer zones. Development within Moderate to High sensitivity areas should be limited and must avoid protected plant species (e.g. *Aloe dichotoma*, *Boscia albitrunca* and *B. foetida*) with a buffer of 20 m. If not possible, all individuals of these species impacted on site must be relocated to suitable habitat in the area. All relevant permits pertaining to the removal and transplanting of the protected species on site must be obtained from the relevant authorities before construction commences.
- Avoid development on habitat with High sensitivity and buffer zones or align along existing infrastructure;

- Avoid where possible construction at or in close proximity to sensitive areas during the months of August - November when most korhaan, bustard and lark species are breeding. These areas include prominent outcrops, quartz outcrops and dolerite gravel plains, optimal forging habitat used by threatened and near threatened species) and optimal breeding habitat and at areas where these birds were observed;
- Should it not be possible to avoid the significant archaeological sites with a minimum buffer of 20 m from the waypoints, then they should be excavated; and
- The possible graves should be avoided with a buffer of at least 5 m or else tested and, if necessary, exhumed prior to construction with approval from the South African Heritage Resources Agency (SAHRA).

The above key recommendations have been taken into consideration and adhered to during compilation of the final development layout (Appendix B of Part 1 of the EMPr).

2 APPROACH TO PREPARING THE EMPr

2.1 COMPLIANCE WITH RELEVANT LEGISLATION

NEMA requires that an EMPr be submitted where a Basic Assessment or EIA is being undertaken for an Application for EA. The content of an EMPr must either contain the information set out in Appendix 4 of the 2014 NEMA EIA Regulations (as amended) promulgated in Government Gazette 40772 and GN R326 on 7 April 2017, or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. As part of the 2016 EGI SEA, a generic EMPr was also compiled for the development and expansion of (a) overhead electricity transmission and distribution infrastructure; and (b) substation infrastructure for the transmission and distribution of electricity. On 2 March 2018, these two Generic EMPrs were gazetted in Government Gazette 41473, GN 162 and GN 163, for public comment for a period of 45 days. **On 22 March 2019, these two Generic EMPrs were gazetted for implementation, in Government Gazette 42323, GN 435.** Parts 2 and 3 of this EMPr therefore subscribes to the requirements of the gazetted EMPrs (Gazette 42323, GN 435). Part 2 (i.e. this section), specifically complies with the Generic EMPr for substation infrastructure.

Since the Generic EMPrs have been gazetted and are applicable to the proposed project, the following has been undertaken:

- **Section 1 of Part B of the gazetted Generic EMPr** contains a **pre-approved template** with aspects that are common to the development of substation infrastructure. **This section will be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.** This section will not be submitted to the DFFE as it has already been pre-approved and gazetted. To allow I&APs access to the pre-approved EMPr template for consideration through the public review process, the template is included in Appendix C of this EMPr (i.e. Part 2 of the EMPr, this document) and can be viewed by I&APs.
- **Section 2 of Part B of the gazetted Generic EMPr has been completed to include site specific information**, a final infrastructure layout and development footprint site map, and a declaration that the Applicant will comply with the pre-approved template provided in Part B:

Section 1 of the gazetted EMPr. This will be submitted to the DFFE for review and decision-making and has been included in **Section 4 (site specific information), Section 5 (final infrastructure layout) and Section 6 (declaration of the Applicant) of this EMPr.**

- **Part C of the gazetted Generic EMPr** has been compiled and included in **Section 7 of this EMPr.** It includes site specific impact management outcomes and impact management actions that are not included in the pre-approved generic EMPr. It will be submitted to the DFFE, for consideration of, and decision on, the EMPr. This section has been prepared by the EAP, with input from relevant specialists. This section of the EMPr is a supplement to the gazetted EMPr and provides site specific mitigation measures identified in the specialist studies included in the Final EIA Report.

2.2 STRUCTURE AND CONTENTS OF THE EMPr

This Site Specific EMPr includes the following:

- Section 4: Site specific information;
- Section 5: Final infrastructure layout and development footprint site map;
- Section 6: Declaration that the Applicant will comply with the pre-approved template provided in Part B: Section 1 of the gazetted EMPr (which is included in Appendix C of this EMPr i.e. Part 2 of the EMPr, this document);
- Section 7: Site-Specific EMPr as required by Part C of the gazetted EMPr.

The Site-Specific EMPr follows the same template as that of Part B – Section 1 of the gazetted EMPr, as recommended. Where applicable, each section of the Site-Specific EMPr is divided into the following four phases of the project cycle:

- Planning and Design Phase;
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

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

- Minimises the ecological footprint of the project on the local environment;
- Minimises impacts on fauna, flora and freshwater ecosystems;
- Facilitates harmonious co-existence between the project and other land uses in the area;
- Enhances the socio-economic benefits in the local area; and
- Contributes to the environmental baseline and understanding of environmental impacts of electrical grid infrastructure in a South African context.

The overall EIA for the Gemsbok Solar PV5 facility assessed a larger area (275 ha and greater). The footprint of the PV facility is approximately 220 ha, which together with the EGI corridor is referred to as the PV5 project site. In this EMPr, for the on-site substation to support the PV5 facility, the following spatial parameter applies to the management actions, unless where specified differently:

- Area of the on-site substation (IPP Substation and Switching Station) for PV5, as shown in Figure 1 and Appendix B (final layout plan) of this EMPr (i.e. Part 2 of the EMPr, this document).

3 ROLES AND RESPONSIBILITIES

Since the Generic EMPrs are applicable for the on-site substations and power lines, it is best to adopt the definitions of the roles and responsibilities as captured in the gazetted EMPrs of GN 435. This will allow consistency of the management of the project from an environmental perspective and will avoid any contradiction in terms of the roles and responsibilities.

The generic roles and responsibilities required for key role players are those of the:

- Project Developer / Developer's Project Manager (DPM);
- Developer Site Supervisor (DSS)
- Environmental Control Officer (ECO);
- Developer's Environmental Officer (DEO);
- Contractor; and
- Contractor's Environmental Officer (CEO).

The definitions of the roles and responsibilities are included in Appendix A of this EMPr (i.e. Part 2 of the EMPr, this document).

The EA dated 19 November 2018 stipulates the following requirements and responsibilities of the ECO:

ECO Duties:

- Condition 25: The holder of this EA must appoint an independent and experienced ECO for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this EA are implemented and to ensure compliance with the provisions of the approved EMPr.
 - Condition 25.1: The ECO must be appointed before commencement of any authorised activities.
 - Condition 25.2: Once appointed, the name and contact details of the ECO must be submitted to the Director: Compliance Monitoring of the DFFE.
 - Condition 25.3: The ECO must keep record of all activities on site, problems identified, transgressions noted and a task schedule undertaken by the ECO.
 - Condition 25.4: The ECO must remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.

Recording and Reporting to the Department:

- Condition 26: All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this EA, must be submitted to the Director: Compliance Monitoring of the Department.
- Condition 27: The holder of the EA must, for the period during which the EA and EMPr remain valid, ensure that project compliance with the conditions of the EA and the EMPr are audited, and that the audit reports are submitted to the Director: Compliance Monitoring of the Department.
- Condition 28: The frequency of auditing and of submission of the environmental audit reports must be as per the frequency indicated in the approved EMPr, taking into account the processes for such auditing as prescribed in Regulation 34 of GN R.982.
- Condition 29: The holder of the authorisation must, in addition, submit environmental audit reports to the Department within 30 days of completion of the construction phase (i.e. within 30 days of the site handover) and a final environmental audit report within 30 days of completion of rehabilitation activities.
- Condition 30: The environmental audit reports must be compiled in accordance with Appendix 7 of the EIA Regulations, 2014 and must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the EA conditions as well as the requirements of the approved EMPr.
- Condition 31: Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

4 SITE SPECIFIC INFORMATION

4.1 CONTACT DETAILS AND DESCRIPTION OF THE PROJECT

4.1.1 Details of the Applicant

Name of Applicant	<ul style="list-style-type: none"> Original Applicant: Gemsbok Solar PV5 (Pty) Ltd Amended Applicant: Mulilo Total Coega (Pty) Ltd <p>Note from the CSIR: As discussed above, there is a process currently underway to apply for an amendment to the EA to change the Project Applicant from <i>Gemsbok Solar PV5 (Pty) Ltd</i> to <i>Mulilo Total Coega (Pty) Ltd</i>. The Application for Amendment to the EA was submitted to the DFFE on 15 April 2021, and it is expected that a decision will be made by 17 May 2021.</p>
Name of Applicant Representative	Warren Morse
Telephone Number:	0216853240
Fax Number:	-
Postal Address:	PO Box 548, Howard Place, 7450
Physical Address:	Top Floor Golf Park 4, Raapenberg Rd, Mowbray

Note: Should the EA be transferred to a new holder, such as Eskom, this section must be completed by the new holder and submitted with the application for an amendment of the EA in terms of the EIA Regulations.

4.1.2 Details and Expertise of the EAP

Company of the EAP	Council for Scientific and Industrial Research (CSIR)
Name of EAP	Kelly Stroebel
Telephone Number:	082 660 1907 021 888 2432 021 888 2400
Fax Number:	021 888 2693
Email Address:	KStroebel@csir.co.za
Expertise of the EAP (Curriculum Vitae included):	<p>Qualifications:</p> <ul style="list-style-type: none"> BSc (Hons) Environmental Science, Rhodes University <p>Experience:</p> <ul style="list-style-type: none"> Kelly has more than 7 years of experience in environmental assessment and management. <p>Professional Registration and Affiliations:</p> <ul style="list-style-type: none"> Registered Candidate Natural Scientist with the South African Council for Natural Scientific Professions (Registration Number: 100151/14). International Association for Impact Assessment, South African Affiliate (Membership Number: 3588). <p>Curriculum Vitae of Kelly Stroebel is included in Appendix A of Part 1 of the EMPr.</p>

4.1.3 Project Name

Project Name	Gemsbok Solar PV5 75 MW Solar Photovoltaic Facility on the Remaining Extent of Portion 3 (Rooidam) of the Farm Gemsbok Bult No. 120, near Kenhardt, Northern Cape
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4.1.4 Description of the Project

Refer to Section 1.3 of this EMPr for a detailed description of the proposed project.

4.1.5 Project Location

The proposed on-site substation will be constructed on the following farm portion:

NUMBER	FARM NAME	FARM NUMBER	PORTION NAME	PORTION NUMBER	LATITUDE (Y) (Mid-point of substation)	LONGITUDE (X) (Mid-point of substation)
1	Remaining Extent of Portion 8 (Rooidam) (a Portion of Portion 3) of the Farm Gemsbok Bult No. 120	120	REMAINING EXTENT OF A PORTION	8	29°6' 27.74"S	21°24'45.00"E

5 FINAL DEVELOPMENT LAYOUT AND DEVELOPMENT FOOTPRINT SITE MAP

This section includes maps of sensitivities, as well as the final infrastructure layout. Feature and sensitivity maps were prepared as part of the EIA Phase and used to inform the final development layout.

Refer to Appendix D of Part 1 of the EMPr for the combined sensitivity and layout map for the proposed project.

6 APPLICANT DECLARATION

PROJECT APPLICANT DECLARATION

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

Signature Proponent/Applicant/Holder of EA

Date:



30 April 2021

7 PROJECT SPECIFIC EMPr

7.1 ALIEN INVASIVE PLANT MANAGEMENT PLAN

Impact Management Outcomes: Avoid establishment and spread of alien invasive plants due to the project activities within the area of the on-site substation (switching station and IPP substation). Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
PLANNING AND DESIGN PHASE						
<ul style="list-style-type: none"> Compile an alien and invasive plant species control and monitoring plan as required in the Alien and Invasive Species Regulations under the National Environmental Management Biodiversity Act (Act 10 of 2004) (NEM: BA), as well as in terms of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA). <u>Note</u> that the only invasive plant species recorded on site during the field surveys for vegetation assessment in December 2015 is <i>Prosopis glandulosa</i>, which is mainly confined to the large watercourses (or drainage lines) on site and which should be avoided by the development where possible. It is however possible that new alien or invasive plant species may become established on site as a result of the construction activities on site. Species that may potentially occur on site include <i>Agave sisalana</i> (Class 2), <i>Atriplex inflata</i> (Class 1b), <i>Atriplex nummularia</i> (Class 2), <i>Datura</i> species (Class 1b) and <i>Xanthium</i> species (Class 1b). Ensure compliance with relevant Environmental Specifications for the control and removal of alien invasive plant species. Appoint a specialist or contact relevant authorities to seek guidance on the removal of the alien vegetation on site. The site referred to includes the area of the on-site substation (IPP Substation and Switching Station) for PV5, as shown in Figure 1 and Appendix C of this EMPr 	Project Developer and ECO	<p>Ensure that this is done and taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.</p> <p>Appoint a suitable specialist / Contractor or contact the relevant authorities to seek guidance on the removal of the planted alien invasive plant species from the site (as defined).</p> <p>Appoint a suitable specialist to compile an alien invasive vegetation eradication</p>	Once-off during the design phase	Project Developer and ECO	Once-off during the design phase	Approved plan in place and ready for auditing, with approval kept on file.

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Part 2: Generic Environmental Management Programme (EMPr) for the IPP Substation and Switching Station to support the Gemsbok Solar PV5 Facility

Impact Management Outcomes: Avoid establishment and spread of alien invasive plants due to the project activities within the area of the on-site substation (switching station and IPP substation). Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
(i.e. Part 2 of the EMPr, this document). ▪ Compile and finalise an alien weed eradication programme.		plan for the site (as defined).				
▪ Appoint a specialist or contractor to undertake a sweep and survey of the final development footprint site ³ , with an alien invasive plant species eradication team to remove exotic vegetation prior to the commencement of construction.	Project Developer, ECO, and Specialist Contractor	Appoint a suitable vegetation contractor to inspect the site ³ and remove any exotic weeds prior to the commencement of construction. ECO to ensure that this is taken into consideration and implemented.	Prior to the commencement of construction	Project Developer and ECO	Once-off during the design phase	Approved plan in place and ready for auditing, with approval kept on file. Verification of removed alien vegetation.
▪ Establish an ongoing monitoring programme for the construction phase to detect and quantify any alien invasive plant species that may become established within the site ³ and identify the problem species (as per CARA and National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM: BA)). ▪ Prepare monitoring programme which will monitor the presence of alien invasive plant species on the site ³ . Monitor the presence of alien invasive plants on the site ³ during the construction phase via visual inspections and take action to remove and control these species. If any alien invasive plant species are detected on the site ³ , then the distribution of these should be mapped (GPS co-ordinates of concentrations of plants). The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project	ECO and Contractor	Mapping alien invasive plant species in terms of distribution and record number of individuals. ECO to ensure that this is taken into consideration and implemented.	When required i.e. when such species are found	ECO	When required i.e. when such species are found	Monitoring report compiled with the alien invasive plant species recorded and mapped.

³ The site referred to includes the area of the on-site substation (IPP Substation and Switching Station) for PV5, as shown in Figure 1 and Appendix B of this EMPr.

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Impact Management Outcomes: Avoid establishment and spread of alien invasive plants due to the project activities within the area of the on-site substation (switching station and IPP substation). Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
area.						
<ul style="list-style-type: none"> ▪ Ensure that alien invasive vegetation found on site, within the proposed project footprint⁴, is immediately controlled and removed promptly, in a scheduled manner throughout the construction phase. The removal of alien vegetation on site during the construction phase should use registered control methods and take into consideration the Alien and Invasive Species Regulations published in terms of Section 97(1) of the NEM: BA, if applicable. Control measures include the following: <ul style="list-style-type: none"> ○ Mechanical control: <ul style="list-style-type: none"> ▪ Physical removal of alien or invasive seedlings by means of hand-pulling or with hand tools such as forks, hoes or shovels (mainly seedlings); ▪ Using a tree-popper or physically removing an entire tree; and ▪ Felling of large trees with or without ringbarking. ○ Herbicide control (organic if possible); ○ Veld management: <ul style="list-style-type: none"> ▪ Fire regimes; and ▪ Grazing cycles. 	ECO and Contractor	Mapping alien invasive plant species on the site ⁴ in terms of distribution and record number of individuals. ECO to ensure that this is taken into consideration and implemented.	When required i.e. when such species are found	ECO	When required i.e. when such species are found	Monitoring report compiled with the alien invasive plant species recorded and mapped.
<ul style="list-style-type: none"> ▪ The removed alien invasive vegetation should be immediately disposed at a suitable waste disposal facility and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species. 	ECO and Contractor	Monitor the removal of the alien vegetation found on site ⁴ via visual inspections. Clearing of alien	When required i.e. when such species are found	ECO	When required i.e. when such species are found	Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing

⁴ The site referred to includes the area of the on-site substation (IPP Substation and Switching Station) for PV5, as shown in Figure 1 and Appendix B of this EMPr.

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Impact Management Outcomes: Avoid establishment and spread of alien invasive plants due to the project activities within the area of the on-site substation (switching station and IPP substation). Revegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		invasive plant species found on site ⁵ and disposal at a suitable and registered disposal facility				purposes.
<ul style="list-style-type: none"> Erosion and sediment control measures must be in place at all areas cleared of alien invasive plant species. 	ECO Contractor and	Revegetate all areas bare of vegetation following the removal of alien invasive plants with local indigenous vegetation as soon as possible.	On-going during the construction phase	ECO	When required	Proof of visual inspection retained on file.
<ul style="list-style-type: none"> Ensure proper management of soil stockpiles. Do not import soil stockpiles from areas with alien plants to ensure proper management of stockpiles. 	ECO Contractor and	<p>Inspect imported soil stockpiles for alien invasive plants before being placed on site.</p> <p>Monitor the presence of alien invasive plants during the construction phase via visual inspections and take action to remove and control these species.</p>	<p>When required i.e. when imported soil stockpiles are being ordered and delivered</p> <p>On-going</p>	ECO	<p>When required i.e. when imported soil stockpiles are being ordered and delivered</p> <p>Ongoing</p>	Proof of visual inspection retained on file.
<ul style="list-style-type: none"> Undertake rehabilitation of disturbed areas as soon as possible after construction. The shallow topsoil layer must be stockpiled separately from the subsoil layers, should the excavations exceed 0.5 m. When 	ECO Contractor and	Establish an effective record keeping system for each area where	Daily (stockpiling) and once-off for the reinstatement	ECO Contractor and	Daily (stockpiling) and once-off for the reinstatement	Proof of visual inspection retained on file.

⁵ The site referred to includes the area of the on-site substation (IPP Substation and Switching Station) for PV5, as shown in Figure 1 and Appendix B of this EMPr.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
the construction has been completed, the topsoil layers, which contain seed and vegetative material, should be reinstated last to allow plants to rapidly re-colonise the bare soil areas. Stockpile the topsoil layer separately and used on site following the construction phase.		soil is disturbed for constructional purposes.	of the topsoil layer		of the topsoil layer	
<ul style="list-style-type: none"> No exotic plants may be used for rehabilitation purposes. Only indigenous plants occurring within a ten (10) kilometre radius of the development site must be utilized. 	ECO Contractor and	Revegetate all areas bare of vegetation with local indigenous vegetation (as described) as soon as possible.	On-going during the construction phase	ECO	When required	Proof of visual inspection retained on file.
OPERATIONAL PHASE						
<ul style="list-style-type: none"> Continue with on-going monitoring programme to detect and quantify any alien plant species that may become established on the site⁶ and identify the highly invasive species during the operation phase. If any alien invasive plant species are detected then the distribution of these should be mapped (GPS co-ordinates of concentrations of plants). The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area. 	Operations and Maintenance Contractor	Mapping alien invasive plant species on the site ⁶ in terms of distribution and record number of individuals. Annual audit of project area ⁶ and immediate surroundings.	Annual audits	Operations and Maintenance Contractor	When required i.e. when such species are found	Monitoring report compiled with the alien invasive plant species recorded and mapped.
<ul style="list-style-type: none"> Immediately control any alien invasive plants that become established within the project site⁶ using registered control methods. Use of herbicides and undertake manual removal of alien vegetation on site where this may arise. Regular address and redress of weeds identified on site by a suitable contractor. The clearance of exotic weed to be 	Project Developer and Environmental Manager	Monitor the use of herbicide sprays and manual removal of alien vegetation by undertaking visual	Bi-annual audits	Project Developer and Environmental Manager	Bi-annual audits	Monitoring report compiled with the alien invasive plant species recorded and mapped.

⁶ The site referred to includes the area of the on-site substation (IPP Substation and Switching Station) for PV5, as shown in Figure 1 and Appendix B of this EMPr.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
undertaken bi-annually at a minimum and on a needs basis at an intermittent level.		inspections and reporting any non-compliance. Maintain register of weed spraying activities and ensure that herbicide use is recorded.				
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> Exotic weed control measures to be instituted through weed control programme on site⁶. Regular redress of exotic weed through the use of herbicide and manual removal. 	Project Developer Project Developer Environmental Manager and Specialist / Contractor Environmental Manager and Specialist / Contractor	Compile weed eradication programme for a period of 12 months after the decommissioning exercise. Appoint contractor to undertake the weed eradication programme. Monitor newly disturbed areas where infrastructure has been removed to detect and quantify any alien invasive plants that may	Weed eradication exercise to be undertaken every 6 months for a period of 12 months following decommissioning. Prior to the commencement of the decommissioning phase. Once-off Once-off	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		become established after decommissioning and rehabilitation. Final external audit of area to confirm that area is free of alien invasive plants within the defined site (as noted above) after 5 years.				

7.2 PLANT RESCUE AND PROTECTION PLAN INCLUDING RE-VEGETATION AND HABITAT REHABILITATION PLAN

Impact Management Outcomes: Minimise loss of natural vegetation. Prevent impacts on natural vegetation in sensitive habitats and Species of Special Concern (SSC). Minimise the loss of seed bank present within the soil. Ensure effective topsoil covering to conserve soil fertility on all disturbed areas, after they have been rehabilitated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
PLANNING AND DESIGN PHASE						
<ul style="list-style-type: none"> The footprint of the development must be limited to the areas required for actual construction works and operational activities. Vegetation clearing must be limited to the required footprint for actual construction works and operational activities. Mitigation measures must be implemented to reduce the risk of erosion and the invasion of alien species. 	Project Developer	Ensure that this is taken into consideration in the design	Once-off during the design phase	ECO	Once-off prior to commencement	Signed off and approved designs that limit development footprint and vegetation clearing.
<ul style="list-style-type: none"> A pre-construction survey of the final development footprint must be conducted by a qualified floral specialist to ascertain the identity and the exact number of individuals of protected species affected by the proposed development. Prior to the commencement of construction, a rescue and rehabilitation operation for these species which could survive translocation must be conducted. Ensure the necessary permits or licenses are identified and applied for as applicable for removal of indigenous vegetation, especially for protected species. The destruction or disturbances of individual trees such as <i>Aloidendron dichotomum</i> (previously <i>Aloe dichotoma</i>), <i>Boscia albitrunca</i>, <i>Boscia foetida</i> and <i>Vachellia erioloba</i>, as well as individuals of the succulents <i>Hoodia gordonii</i> and <i>Hoodia officinalis</i>, should any of the above occur on site, must be avoided during the construction of the substation. Alternatively, permits for the rescue i.e. removal and translocation of any of these protected species must be applied for and granted by the relevant authority. Await response and provision of permit (as required) from the relevant Authorities prior to the removal of the indigenous species (if required). Once these permits are obtained, search and rescue must be 	Project Developer and ECO/ Specialist/ Contractor	<p>Review the findings of the Specialist Assessments and consider legislative requirements in respect of loss of indigenous and protected vegetation etc.</p> <p>Review the approved site plan with the ECO and appoint a suitable terrestrial ecologist to undertake a walk-through of the final site layout.</p>	Once-off during the planning and design phase, prior to the commencement of construction	ECO	Once-off during the planning and design phase, prior to the commencement of construction	<p>Permits obtained, verified and kept on file. Verify that this has been undertaken by reviewing approved permits.</p> <p>Visual evidence of search and rescue i.e. photographs</p>

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Impact Management Outcomes: Minimise loss of natural vegetation. Prevent impacts on natural vegetation in sensitive habitats and Species of Special Concern (SSC). Minimise the loss of seed bank present within the soil. Ensure effective topsoil covering to conserve soil fertility on all disturbed areas, after they have been rehabilitated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
undertaken for the relevant indigenous species. It is advised that translocation of relevant plants should happen at any appropriate Provincial Nature Reserve in the Northern Cape and/or the Karoo Desert National Botanical Garden at Worcester in the Western Cape.		<p>Contact the relevant Provincial and National Environmental Authorities to discuss and confirm if any protected species need to be relocated or rescued, and undertake the required permit application processes.</p> <p>Appoint a suitable Search and Rescue Specialist / Contractor to undertake plant search and rescue.</p> <p>Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.</p>				
<ul style="list-style-type: none"> ▪ Consideration of the siting and layout of all project structures and infrastructure, including power lines to avoid highly sensitive areas as identified in the Specialist studies (Chapter 8 for the Vegetation and Wetlands study, Chapter 8 for the Avifaunal study and Chapter 9 for 	Project Developer	Ensure that this is taken into consideration in the	Once-off during the design phase	ECO	Once-off prior to commencement	Signed off and approved designs that avoids sensitive areas.

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Impact Management Outcomes: Minimise loss of natural vegetation. Prevent impacts on natural vegetation in sensitive habitats and Species of Special Concern (SSC). Minimise the loss of seed bank present within the soil. Ensure effective topsoil covering to conserve soil fertility on all disturbed areas, after they have been rehabilitated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>the faunal study). Also refer to the sensitivity maps and layouts (Appendix B, Appendix C and Appendix D of Part 1 of the EMPr).</p> <ul style="list-style-type: none"> ▪ Avoid major drainage lines during the design and layout of the proposed PV facility. A buffer of 32 m from mayor drainage lines must be applied. Ensure that sensitive habitat and features (as defined in the Vegetation and Wetland Impact Assessment as well as the Avifaunal Assessment, Chapters 8 and 9 respectively of the EIA Report; Appendix B, Appendix C and Appendix D of Part 1 of the EMPr) are considered in the design. ▪ Incorporate minor drainage lines into design and avoid unnecessary disturbance, where applicable. Refer to the Vegetation and Wetlands Impact Assessment, Chapter 8 of the EIA Report (which includes the buffers from minor drainage lines, i.e. 20 m), and Appendix B, Appendix C and Appendix D of Part 1 of the EMPr). ▪ A buffer zone of 32 m must be implemented from the edge of the major drainage lines on site (as shown in Appendix B, Appendix C and Appendix D of Part 1 of the EMPr), in which no development or activities should take place. A buffer of 20 m should be applied to the minor drainage lines on site ▪ Adhere to the buffer specifications in the Avifauna impact assessment (Chapter 9 of the EIA Report): <ul style="list-style-type: none"> ○ Apply a buffer of 32 m from major drainage lines. ○ Apply a buffer of 100 m from sensitive areas, including dams and watering points. ○ Apply a buffer of 100 m from prominent outcrops, quartz outcrops and dolerite gravel plains) ○ If any breeding or nesting bird of prey is encountered during the construction phase, it must be buffered by at least 500 m. 		design				

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> o All bustard / Korhaan observations should be buffered by 250 m. 						
CONSTRUCTION PHASE						
<ul style="list-style-type: none"> ▪ Areas outside of the footprint, including sensitive areas and buffer areas, must be clearly demarcated (using fencing and appropriate signage) before construction commences and must be regarded as “no-go” areas. Contractors and construction workers must be clearly informed of the “no-go” areas. 	Project Developer	Ensure that this is taken into consideration before construction commences	Once-off prior to the commencement of construction	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> ▪ Before the clearing of the site, the appropriate permits must be obtained from the Department of Forestry, Fisheries and the Environment (DFFE) for the removal of tree species listed in the National Forest Act, and from the relevant provincial department for the destruction of species protected in terms of the specific provincial legislation. No construction activities can commence without having obtained the necessary permits for threatened or protected species (ToPS) listed and provincially protected species within the study area. Copies of the permits must be kept by the ECO. 	Project Developer and Contractor	Ensure that the permits are applied for as relevant prior to the construction phase	Once-off during the planning and design phase	ECO, Contractor and Project Developer	Once-off during the planning and design phase	Permits obtained, verified and kept on file. Verify that this has been undertaken by reviewing approved permits.
<ul style="list-style-type: none"> ▪ The Contractors and construction personnel must be made aware that indigenous vegetation must be not be removed or damaged; this includes succulents (e.g. <i>Hoodia gordonii</i>, <i>Hoodia officinalis</i> <i>Euphorbia</i> <i>ssp.</i>, <i>Mesembryanthemum</i> <i>ssp</i>) and the protected quiver tree, <i>Aloidendron dichotomum</i>. ▪ Educate construction workers about the biodiversity importance of the area by means of environmental awareness programmes. 	Contractor / ECO ECO ECO	Carry out Environmental Awareness Training. Conduct audits of the signed attendance registers. Issue fines where relevant as per specifications in their contracts.	Once-off training and ensure that all new staff is inducted. Monthly During construction phase	ECO	Monthly	Attendance registers of the environmental awareness training kept on file

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Impact Management Outcomes: Minimise loss of natural vegetation. Prevent impacts on natural vegetation in sensitive habitats and Species of Special Concern (SSC). Minimise the loss of seed bank present within the soil. Ensure effective topsoil covering to conserve soil fertility on all disturbed areas, after they have been rehabilitated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> The staff should be educated not to collect and harvest plants or veldkos and not to collect firewood. 	ECO and Contractor	Ensure that staff are given induction and environmental awareness training to discuss these aspects. New staff must also be inducted. Ensure that environmental awareness programmes are implemented	Once-off and upon new staff being appointed	ECO	Monthly	Attendance registers of the environmental awareness training kept on file
<ul style="list-style-type: none"> Undertake rehabilitation of disturbed areas as soon as possible after construction. Stockpile the shallow topsoil layer separately from the subsoil layers. Reinstate the topsoil layers (containing seed and vegetative material) when construction is complete to allow the plants to rapidly re-colonise the bare soil areas. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site during the pre-construction phase. 	ECO and Contractor	Establish an effective record keeping system for each area where soil is disturbed for constructional purposes.	Daily (stockpiling) and once-off for the reinstatement of the topsoil layer	ECO and Contractor	Daily (stockpiling) and once-off for the reinstatement of the topsoil layer	Proof of visual inspection retained on file.
<ul style="list-style-type: none"> Placement of lighting, particularly security lighting, to avoid excessive influence on surrounding areas. Placement of lighting to be judiciously considered at time of implementation. 	Project Developer	Ensure that this is taken into consideration prior to the installation of the lighting	Once off	Project Developer	Once off prior to the installation of the lighting	Approved plan kept on file. Verify that this has been undertaken by reviewing approved plans.
OPERATIONAL PHASE						
<ul style="list-style-type: none"> The collection, hunting or harvesting of any plants, any protected trees, fuel wood or animals at the site should be strictly forbidden and the staff educated to prevent this from happening. Staff must remain within the boundaries of the substation maintenance 	Environmental Manager	Ensure that staff are given induction and environmental awareness training to discuss these aspects.	Once-off and upon new staff being appointed	Environmental Manager	Monthly	Attendance registers of the environmental awareness training kept on file

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
area at all times. The undeveloped portions of the site must be treated as “no-go” areas.		New staff must also be inducted.				
<ul style="list-style-type: none"> ▪ Adhere to the buffer specifications in the Vegetation and Wetlands impact assessment (Chapter 8 of the EIA Report): <ul style="list-style-type: none"> ○ Apply a buffer of 32 m from major drainage lines. ○ Apply a buffer of 20 m from minor drainage lines. 	Environmental Manager	Audits to ensure that the specified buffers are adhered to. Monitor the activities via visual inspections, and record and report any non-compliance.	At the beginning of the operational phase	Environmental Manager	At the beginning of the operational phase, once-off	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> ▪ Any vegetation clearing that needs to take place as part of maintenance activities (during the operational phase of the approved development), must be done in accordance to the approved EMPr. 	Environmental Manager	Inspect the site during vegetation clearing and ensure that it takes place according to the approved EMPr	Weekly	Environmental Manager	Weekly	Records of clearance and maintenance activities kept on file (e.g. photographs, documents)
<ul style="list-style-type: none"> ▪ Management of vegetation at an optimum level of growth and height is required. ▪ Identify protocol for pruning of vegetation and clearance where required. 	Environmental Manager	Identify means of pruning and clearance of vegetation. For example, brushcutters, grazing, etc.	Ongoing and as required	Environmental Manager	Weekly	Records of erosion kept on file (e.g. photographs, documents)
<ul style="list-style-type: none"> ▪ Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. Allow natural vegetation recruitment from the topsoil unless the vegetation cover is insufficient. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site pre-construction or by using a commercial seed mix indigenous to the area. 	Botanist rehabilitation specialist or	Compare vegetation establishment on rehabilitated areas to surroundings natural vegetation.	At the end of the growing season and then as recommended by the specialist	Environmental Manager	Weekly	Audit report kept on file, including, where possible, photographic evidence, as well as proof of appointment of specialist on file.
<ul style="list-style-type: none"> ▪ Undertake maintenance of rehabilitated areas in accordance with the rehabilitation and landscaping plan. 	Environmental Manager	Monitor topsoil removal and rehabilitation activities,	Weekly or Monthly	Environmental Manager	Weekly or Monthly	Audit report kept on file, including, where possible, photographic

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		and record and report non-compliance.				evidence,
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> ▪ All damaged areas shall be rehabilitated upon completion of the contract. ▪ All natural areas must be rehabilitated with species indigenous to the area. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site pre-construction. ▪ Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. ▪ Disturbed and transformed areas should be contoured to avoid lines and forms that will contrast with the existing landscapes. 	Project Developer with feedback and input from an appropriate specialist. with advice from specialist	Final external audit of area to confirm that area is rehabilitated to an acceptable level	Once off	Environmental Manager	Annually	Report compiled to include evidence of acceptable rehabilitation

7.3 OPEN SPACE MANAGEMENT PLAN AND FAUNAL MANAGEMENT

Impact Management Outcomes: The reduction in the impact that barrier will have on animal movement within the area, and to reduce impacts on fauna as a result of the project. Reduce effects of the intrusion of the on-site substation on views of sensitive visual receptors. Avoid or reduce bird collisions with or due to infrastructure related to the project.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
PLANNING AND DESIGN PHASE						
<ul style="list-style-type: none"> ▪ Ensure compliance with relevant Environmental Specifications for the control and removal of alien invasive plant species. ▪ Appoint a specialist or contact relevant authorities to seek guidance on the removal of the alien vegetation on site. ▪ Compile and finalise an alien weed eradication programme. 	Project Developer and ECO	<p>Appoint a suitable specialist / Contractor or contact the relevant authorities to seek guidance on the removal of the planted alien invasive plant species.</p> <p>Appoint a suitable specialist to compile an alien invasive vegetation eradication plan.</p> <p>Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.</p>	Once off	Project Developer	Once off during the design phase	Approved plan in place and ready for auditing, with approval kept on file.
CONSTRUCTION PHASE						
<ul style="list-style-type: none"> ▪ Watercourses outside the approved footprint / layout must be treated as “no-go” areas and appropriately demarcated as such. No vehicles, machinery, personnel, construction material, fuel, oil, bitumen or waste 	Project Developer	Ensure that this is taken into consideration by undertaking site visits	Throughout the construction phase	ECO	Monthly	Audit report kept on file, including photographic evidence

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
must be allowed into these areas without the express permission of and supervision by the ECO, except for rehabilitation work in these areas.		and inspections				
<ul style="list-style-type: none"> Any fauna directly threatened by the construction activities should be removed to a safe location by a suitably qualified person. 	Project Developer and ECO	Ensure that this is taken into consideration during construction and that a suitably qualified specialist is appointed to remove such fauna, when required	Throughout construction when required	ECO	When required	Audit report kept on file, including, where possible, photographic evidence and confirmation of removal to a safe location
<ul style="list-style-type: none"> The hunting and trapping of animals on-site or in the adjacent area should be strictly forbidden. Fines must be issued for non-compliance as specified in their contracts. Conduct an Environmental Awareness Training and induction for all construction staff and personnel. 	ECO and Contractor	Ensure that staff are given induction and environmental awareness training to discuss these aspects. New staff must also be inducted.	Once-off and upon new staff being appointed	ECO	Monthly	Attendance registers of the environmental awareness training kept on file
<ul style="list-style-type: none"> Establish a recording method in order to monitor the construction activities, including species presence within site, mortalities and sitings. This is in order to identify any faunal mortalities and record the details (such as the reason, spatial extent etc.) in order to avoid repetition of fatality. 	ECO	Establish database of species, sitings etc. Construction personnel should advise on the findings and presence of fauna on site.	During the construction phase (daily to monthly)	ECO	Monthly	Audit report kept on file, including, where possible, photographic evidence
<ul style="list-style-type: none"> Appoint a Specialist to conduct an inspection of the final project layout and sweep or inspect the site for any fauna, once the fencing is complete (i.e. the established site should be flushed to ensure any large wildlife is not contained within the fenced area). Appoint a small 	ECO and Project Developer	Team to flush game as required. ECO to monitor flushing process and	Once off prior to commencement of construction and thereafter if	ECO	When required	Audit report kept on file, including, where possible, photographic evidence, as well as

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
team to flush wildlife during the early evening. Game should be flushed by driving a team through the gated facility towards the exit.		record any incidents or non-compliance.	required.			proof of appointment of specialist on file.
<ul style="list-style-type: none"> Monitor trenches at the start and end of each working day to check if any small animals are trapped. 	ECO and Contractor	Ensure that this is taken into consideration by undertaking site visits and inspections	Throughout the construction phase	ECO	Daily	Audit report kept on file, including photographic evidence
<ul style="list-style-type: none"> No animals (including snakes) shall be killed on site. The appointed ECO must receive snake handling training to enable him or her to remove and relocate any poisonous snakes during the construction phase. An expert or a suitable specialist should be appointed to remove and relocate any poisonous snakes during the construction phase, when required. 	Project Developer, ECO and Contractor	<p>Ensure that staff are given induction and environmental awareness training to discuss these aspects. New staff must also be inducted.</p> <p>Ensure that the ECO receives adequate training to handle snakes.</p> <p>Ensure that specialist snake experts are appointed when needed</p>	<p>Once-off and upon new staff being appointed</p> <p>Once-off and as required thereafter</p> <p>As required during construction</p>	ECO	Monthly	<p>Attendance registers of the environmental awareness training kept on file</p> <p>Confirmation of training on handling of snakes kept on file</p> <p>Appointment letters of specialists kept on file</p>
<ul style="list-style-type: none"> The construction personnel and staff should be made aware of the presence of fauna within the proposed project area. The construction personnel and staff must also be made aware of the general speed limits on site and must be alert at all times for potential crossings. 	ECO and Contractor	Ensure that staff are given induction and environmental awareness training to discuss these aspects.	Once-off and upon new staff being appointed	ECO	Monthly	Attendance registers of the environmental awareness training kept on file

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		New staff must also be inducted.				
<ul style="list-style-type: none"> ▪ Ensure that the live electrical fence wire is not placed at ground level. ▪ Conduct inspections of the fence line to address any animals that may be affected by the fence. 	Project Developer / Contractor	Daily to monthly record keeping. A register of all faunal sightings indicating date of siting; species affected; position of species (specific or indicative) and other observations should be established	Conduct regular (daily) inspections of the fence line to address any animals that may be affected by the fence.	ECO	Monthly	Proof of inspections and records kept on file.
OPERATIONAL PHASE						
<ul style="list-style-type: none"> ▪ The relevant requirements and methodology for post construction bird monitoring in terms of the applicable and most recent Best Practice Guideline at the time, e.g. "Birds and Solar Energy, Best Practice Guidelines" must be adhered to. 	Project Developer	Ensure that the relevant requirements for the post-construction bird monitoring in terms of the applicable Birds and Solar Energy Best Practice Guidelines are adhered to.	As prescribed in the relevant Guidelines	Project Developer	When required	Report compiled to include evidence of post-construction monitoring requirements
<ul style="list-style-type: none"> ▪ Prior to the commencement of the operational phase, the Project Developer and the landowner need to reach a decision in terms of the allowance of faunal activities or redress of faunal activities within site. ▪ Identify points of frequent faunal activity and impact on operations. Undertake monitoring of faunal activities within the site and the immediate proximity of the site. 	Environmental Manager	Establish reporting procedure. Monitor the presence of fauna during the operational phase via visual inspections and site visits.	As required	Environmental Manager	As required	Report compiled to include evidence of faunal activity

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> ▪ The operational personnel and staff should be made aware of the presence of fauna within the proposed project area. The operational personnel and staff must also be made aware of the general speed limits on site and must be alert at all times for potential crossings. 	Environmental Manager	Ensure that staff are given induction and environmental awareness training to discuss these aspects. New staff must also be inducted.	Once-off and upon new staff being appointed	Environmental Manager	As required during maintenance	Attendance registers of the environmental awareness training kept on file
<ul style="list-style-type: none"> ▪ Avoidance of damage to infrastructure by faunal activity as well as impact on fauna as a result of the site infrastructure. ▪ Identify impact of burrowing and other faunal activities on the fence line and operations activities. ▪ Undertake the management of faunal intrusion through the fence, including possible mortalities. ▪ Provide critter paths through the fence line to allow species access to site. ▪ Ensure that the live electrical fence wire is not placed at ground level. ▪ Conduct inspections of the fence line to address any animals that may be affected by the fence. ▪ Promote and support faunal presence and activities within the site. 	Environmental Manager	Identify where fauna may be affecting operations of site (burrows etc.). Consider redress if necessary. Conduct regular (daily) inspections of the fence line to address any animals that may be affected by the fence. Monitor the activities via visual inspections, and record and report any non-compliance.	Daily to monthly record keeping. A register of all faunal sightings indicating date of siting; species affected; position of species (specific or indicative) and other observations should be established.	Environmental Manager	As required during maintenance	Report compiled to include evidence of faunal activity and infrastructure impact
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> ▪ Disturbed and transformed areas should be contoured to approximate naturally occurring slopes to avoid lines and forms that will contrast 	Project Developer	Final external audit of area to confirm that	Once off	Environmental Manager	Annually	Report compiled to include evidence of

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
with the existing landscapes <ul style="list-style-type: none"> Stockpiled topsoil should be reapplied to disturbed areas and these areas should be re-vegetated using a mix of native species in such a way that the areas will form as little contrast in form, line, colour and texture with the surrounding undisturbed landscape. Edges of re-vegetated areas should be feathered to reduce form and line contrasts with surrounding undisturbed landscape. 		area is rehabilitated to an acceptable level				acceptable rehabilitation
<ul style="list-style-type: none"> Night lighting of reclamation sites should be minimised within requirements of safety and efficiency. Working at night should be avoided. 	ECO Contractor and	Monitoring adherence requirement of to	On-going	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

7.4 TRAFFIC MANAGEMENT AND TRANSPORTATION PLAN

Impact Management Outcomes: Manage impact that additional traffic generation will have on road network. Limit the deterioration of surface road condition. Minimise the impact of the construction, operation and decommissioning activities on the local traffic and avoid accidents with pedestrians, animals and other drivers on the surrounding tarred / gravel roads. Limit the release of noise, pollutants and dust emissions.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
PLANNING AND DESIGN PHASE						
<ul style="list-style-type: none"> Should abnormal loads have to be transported by road to the site, a permit needs to be obtained from the Provincial Government Northern Cape (PGNC) Department of Public Works, Roads and Transport. 	Project Developer and Contractor	Ensure that the permits are applied for as relevant prior to the construction phase	Once-off during the planning and design phase	ECO, Contractor and Project Developer	Once-off during the planning and design phase	Permits obtained, verified and kept on file. Verify that this has been undertaken by reviewing approved

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
						permits.
<ul style="list-style-type: none"> ▪ If the Transnet Service Road will be used as the designated access road to site, discussions must be held with Transnet Freight Rail prior to commencement to confirm requirements and details of the agreement. ▪ Ensure that the requirements for use of the Transnet Service Road are addressed and considered in the design, as and where applicable. 	Project Developer and Contractor	Ensure that discussions are held between the relevant parties and agreements reached prior to the construction phase	Once-off during the planning and design phase	ECO, Contractor and Project Developer	Once-off during the planning and design phase	Proof of discussions and agreements recorded, verified and kept on file. Verify that this has been undertaken by reviewing approved minutes of meetings and agreements
<ul style="list-style-type: none"> ▪ If the Transnet Service Road will be used as the designated access road, the registration details of all vehicles that will make use of the road during the construction and operational phases must be provided to Transnet Freight Rail, in order to obtain official permits. 	Project Developer and Contractor	Ensure that the permits are applied for as relevant prior to the construction phase	Once-off during the planning and design phase	ECO, Contractor and Project Developer	Once-off during the planning and design phase	Permits obtained, verified and kept on file. Verify that this has been undertaken by reviewing approved permits.
<ul style="list-style-type: none"> ▪ Provide a Transport Traffic Plan to the South African National Roads Agency Limited (SANRAL), if required. 	Contractor and ECO	Ensure that the plan is compiled and submitted prior to commencement	Once-off during the planning and design phase	ECO and Project Developer	Once-off during the planning and design phase	Approved plan kept on file. Verify that this has been undertaken by reviewing approved plans.
<ul style="list-style-type: none"> ▪ A Road Maintenance Plan should be developed for the section of the Transnet Service Road that will be used or the unnamed farm road should that be used. The plan should address the requirements of Transnet Freight Rail, including but not limited to, grading, dust suppressant mechanisms, drainage, signage, and speed limits. 	Project Developer, Contractor and ECO	Ensure that the plan is compiled and submitted prior to commencement.	Once-off during the planning and design phase.	ECO and Project Developer	Once-off during the planning and design phase	Approved plan kept on file. Verify that this has been undertaken by reviewing approved plans.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
<ul style="list-style-type: none"> Well maintained vehicles should be used together with well-trained drivers during the construction phase. Vehicle maintenance and driver competency should be monitored. Proof of driver competency as well as the vehicle checks should be verified and undertaken to ensure that vehicles are roadworthy and hence, do not pose a safety risk. The Contractors must ensure that construction vehicles are roadworthy, properly serviced and maintained, and respect the vehicle safety standards implemented by the Project Developer. 	Contractor and ECO	Carry out random checks of driver licenses and conduct random visual inspections of construction vehicles for roadworthiness.	Random visual inspection of vehicles weekly.	ECO	Weekly	Reports to document vehicle conditions kept on file and monitored.
<ul style="list-style-type: none"> During the construction phase, suitable parking areas should be designated for trucks and vehicles. 	Project Developer and ECO	Monitor the placement of the designated parking area for trucks and vehicles via visual inspections and record and report any non-compliance.	Once-off prior to construction and as required during the construction phase.	ECO and Contractor	Once-off prior to construction and as required during the construction phase.	Visual inspections and site photographs
<ul style="list-style-type: none"> The use of public transport (buses and / or minibus taxis) to convey construction personnel to the site should be encouraged. 	Appointed Contractor	Contractor may record arrival and departure times as well as number of workers using minibuses.	Once a month on a randomly selected day.	ECO	On-going	Report compiled to include evidence of use of public transport
<ul style="list-style-type: none"> Vehicles must not carry loads in excess of those for which the vehicle is in order to reduce impacts on the road structures, particularly the access roads leading to the site. Random visual inspection of vehicles should be undertaken in order to monitor for overloading. The inspections should also verify if the trucks are covered with appropriate material (such as tarpaulin) if and where possible. 	Appointed Contractor	Perform visual inspection of vehicles during the construction phase.	Random visual inspection of vehicles weekly.	ECO	Random visual inspection of vehicles weekly.	Report compiled to include evidence of use of load carrying of vehicles

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> Road kill monitoring programme (inclusive of wildlife collisions record keeping) should be established and a product such as Animex fences installed, if needed, to direct animals to safe road crossings. 	Contractor and ECO	Appropriate monitoring should be undertaken and Animex fences installed, if needed to direct animals to safe road crossings	Weekly	ECO	Throughout construction	Reports to document road kill are kept on file and monitored.
<ul style="list-style-type: none"> Adhere to all speed limits applicable to all roads used. All heavy load vehicles maintain a speed limit of 40 km/hour in proposed section of the Transnet Service Road. 	Contractor and ECO	Ensure that speed limits are adhered to. Carry out random visual inspections to verify speed limits and general awareness of vehicle drivers.	Daily Random during the construction phase	ECO	Throughout construction	Reports to document speed limits are kept on file and monitored.
<ul style="list-style-type: none"> Implement clear and visible signage and signals indicating movement of vehicles at the intersection with the Transnet Service Road to ensure safe entry and exit. 	Contractor and ECO	Implement clear signalisation. Carry out random inspections to verify whether proper construction signage is being implemented.	On-going Random during the construction phase	ECO	Throughout construction	Reports to document implementation of signage are kept on file and monitored.
<ul style="list-style-type: none"> The access road should be inspected on a weekly basis for structural damage. 	Contractor and ECO	Ensure that the road maintains current condition through photographic surveys and monitoring	Weekly	ECO	Throughout construction	Reports to document road condition are kept on file and monitored.
<ul style="list-style-type: none"> Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and 	Contractor and ECO	Ensure dust management measures are in place	On-going	ECO	On-going	Approved strategies kept on file. Verify that

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
stockpiles.		to adequately decrease the generation of dust.				this has been undertaken by reviewing approved plans.
<ul style="list-style-type: none"> Make provision for the repairing of subgrade deterioration (i.e. pot holes, dust holes) that could possibly result due to loading of heavy construction vehicles on the Transnet Service Road. 	Contractor and ECO	Make provision for repairs required to road	Agree to with Transnet	ECO	On-going	Approved repair strategies kept on file. Verify that this has been undertaken by reviewing approved plans.
<ul style="list-style-type: none"> Construction vehicles must have their lights on at all times. Lights to be properly set to not blind train drivers who may then miss important signals, e.g. stop signal (Signal Passed At Danger (SPAD)) 	Contractor and ECO	Ensure lights are on and properly set by undertaking random visual inspections	On-going	Contractor and ECO	On-going	Reports to document outcome of visual inspections of vehicle are kept on file and monitored.
<ul style="list-style-type: none"> Postpone or reduce dust-generating activities during periods with strong wind. Earthworks may need to be rescheduled or the frequency of application of dust control / suppressant increased. 	Contractor and ECO	Ensure dust management measures are in place to decrease the dust generated	On-going	ECO	Throughout construction	Reports to document re-scheduling of earthworks or frequency adjustment of dust control are kept on file and monitored.
OPERATIONAL PHASE						
<ul style="list-style-type: none"> Well maintained vehicles should be used together with well-trained drivers during the operational phase, as required. Vehicle maintenance and driver competency should be monitored. Proof of driver competency as well as the vehicle checks should be verified and undertaken to ensure that vehicles are roadworthy and hence, do not 	Project Developer	Carry out random checks of driver licenses and conduct random visual inspections of	Random visual inspection of vehicles weekly.	Environmental Manager	Weekly	Reports to document vehicle conditions kept on file and monitored.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
pose a safety risk. Vehicles must be roadworthy, properly serviced and maintained.		construction vehicles for roadworthiness.				
<ul style="list-style-type: none"> Adhere to all speed limits applicable to all roads used. All heavy load vehicles maintain a speed limit of 40 km/hour in proposed section of the Transnet Service Road. 	Project Developer	Ensure that speed limits are adhered to. Carry out random visual inspections to verify speed limits and general awareness of vehicle drivers.	Daily Random during the operational phase	Environmental Manager	Throughout operations	Reports to document speed limits are kept on file and monitored.
<ul style="list-style-type: none"> Implement clear and visible signage and signals indicating movement of vehicles at the intersection with the Transnet Service Road to ensure safe entry and exit. 	Project Developer	Implement clear signalisation. Carry out random inspections to verify whether proper signage is being implemented.	On-going Random during the construction phase	Environmental Manager	Throughout operations	Reports to document implementation of signage are kept on file and monitored.
<ul style="list-style-type: none"> The use of public transport (buses and / or minibus taxis) or carpooling to convey operational personnel to the site should be encouraged. 	Project Developer	Record arrival and departure times as well as number of workers using minibuses.	Once a month on a randomly selected day.	Environmental Manager	On-going	Report compiled to include evidence of use of public transport
<ul style="list-style-type: none"> Unnecessary impacts on surrounding natural vegetation must be avoided. All operational and maintenance vehicles to remain on the roads and no driving off road allowed. 	Project Developer	Strict control over the behaviour of operational workers, restricting activities to within demarcated areas	On-going when maintenance work is being undertaken	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> Vehicle drivers shall drive at moderate speed on site access roads to minimise or eliminate dust generation. 	Project Developer	Ensure generation of dust to an adequate level during operational activities	On-going when maintenance work is being undertaken	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Adhere to requirements made within Transport Traffic Plan and Road Maintenance Plan 	Project Developer	Monitor the requirements as set out in the Plan as ensure that it is adhered to	On-going	Environmental Manager	On-going	Report compiled to include evidence of acceptable road maintenance and traffic management
<ul style="list-style-type: none"> Limit access to the site to personnel. 	Project Developer	Maintain register of people entering site and restrict access to personnel.	On-going	Environmental Manager	On-going	Report compiled to include evidence of access control to site
<ul style="list-style-type: none"> The access road should be inspected on a weekly basis for structural damage. 	Project Developer	Ensure that the road maintains current condition through photographic surveys and monitoring	Weekly	Environmental Manager	On-going	Reports to document road condition are kept on file and monitored.
<ul style="list-style-type: none"> Implement management strategies for dust generation e.g. apply dust suppressant on the Transnet Service Road, exposed areas and stockpiles. 	Project Developer	Ensure dust management measures are in place to adequately decrease the generation of dust.	On-going	Environmental Manager	On-going	Approved strategies kept on file. Verify that this has been undertaken by reviewing approved plans.
<ul style="list-style-type: none"> Vehicles must not carry loads in excess of those for which the vehicle is in order to reduce impacts on the road structures, particularly the 	Project Developer	Perform visual	Random visual inspection of	Environmental	Random visual inspection of	Report compiled to include evidence of

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
access roads leading to the site. Random visual inspection of vehicles should be undertaken in order to monitor for overloading (where applicable).		inspection of vehicles	vehicles weekly.	Manager	vehicles weekly.	use of load carrying of vehicles
<ul style="list-style-type: none"> Make provision for the repairing of subgrade deterioration (i.e. pot holes, dust holes) that could possibly result due to loading of heavy vehicles on the Transnet Service Road. 	Project Developer	Make provision for repairs required to road	Agree to with Transnet	Environmental Manager	On-going	Approved repair strategies kept on file. Verify that this has been undertaken by reviewing approved plans.
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> Implement measures documented during the construction phase. 	Implement measures documented during the construction phase.	Implement measures documented during the construction phase.	Implement measures documented during the construction phase.	Implement measures documented during the construction phase.	Implement measures documented during the construction phase.	Implement measures documented during the construction phase.

7.5 EROSION MANAGEMENT PLAN

Impact Management Outcomes: Prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation. Prevent loss of natural vegetation through erosion. Minimise habitat fragmentation and loss of connectivity.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
<ul style="list-style-type: none"> Sand, stone and cement should be stored in demarcated areas, and covered or sealed to prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation. 	ECO Contractor and	Undertake regular inspections of the via site audits to verify that sand, stone and cement are stored and handled as instructed.	Daily	ECO	Weekly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Vegetation clearing during construction must be restricted to the footprint of the proposed project components and planned infrastructure only. It should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 	ECO and Contractor ECO	Monitor vegetation clearing throughout the construction phase via visual site inspections. Record non-compliance and incidents. Undertake regular monitoring for erosion to ensure is reduced and rectified as soon as possible.	Daily Daily	ECO	Weekly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> The shallow topsoil layer must be stockpiled separately from the subsoil layers, should the excavations exceed 0.5 m. When the construction has been completed, the topsoil layers, which contain seed and vegetative material, should be reinstated last to allow plants to rapidly re-colonise the bare soil areas. 	ECO Contractor and	Establish an effective record keeping system for each area where soil is disturbed for constructional purposes.	Daily (stockpiling) and once-off for the reinstatement of the topsoil layer	ECO Contractor and	Daily (stockpiling) and once-off for the reinstatement of the topsoil layer	Proof of visual inspection retained on file.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> ▪ Identify cause of erosion and possible means of redress (i.e. implement erosion control measures, where applicable), such as the use of geofabric, stone gabions and re-vegetation or similar measures. ▪ Erosion control measures should seek to reduce surface flow velocity and allow for settlement on site of silt laden surface waters. Washaways, excessive loss of soils and gulleys can be considered to be indicative of excessive erosion. ▪ Remove the topsoil from the proposed tower base locations and store it temporarily for later use. ▪ Use the subsoil for shaping during the reinstatement phase and place topsoil on top. ▪ Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring. 	ECO and Project Developer	<p>Monitor the erosion on site during construction, as well as the implementation and effectiveness of erosion control on site (such as the use of geofabric, stone gabions and re-vegetation or similar measures).</p> <p>Monitor all disturbed areas and new vehicle tracks on site for signs of erosion.</p> <p>Establish an effective record keeping system for each area where soil is disturbed for construction and decommissioning purposes.</p>	Ongoing and as required during erosion events.	ECO and Project Developer	Ongoing and as required during erosion events.	Proof of visual inspection retained on file.
OPERATIONAL PHASE						
<ul style="list-style-type: none"> ▪ The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. Other erosion control measures that can be implemented are as follows: 1) Brush packing with cleared vegetation, 2) Planting of vegetation, 3) Hydro-seeding / hand sowing. All erosion control mechanisms need to be regularly maintained. 	Project Developer	Monitor efficiency of erosion control measures	Weekly or monthly	Environmental Manager	Weekly or monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> Conduct regular monitoring for erosion to ensure that no erosion problems are occurring at the site as a result of the roads and other infrastructure. Ensure that all erosion problems are rectified as soon as possible. 	Project Developer	Undertake regular monitoring for erosion to ensure is reduced and rectified as soon as possible.	Monthly	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Implement an effective system of storm water run-off control, where required. The system must effectively collect and safely disseminate run-off water from all accumulation points and prevent down slope erosion. 	Project Developer	Undertake site inspections to verify the effectiveness and integrity of the storm water run-off control system and record any erosion on site or downstream. Corrective action must be implemented to the run-off control system if erosion occurs.	Quarterly	Environmental Manager	Quarterly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area. 						

7.6 SPECIFIC PROJECT RELATED ENVIRONMENTAL IMPACTS

Impact Management Outcomes:						
Visual: Reduce visual intrusion of construction activities project wide.						
Heritage: Achieve a layout that minimizes the potential later impacts to archaeological resources and / or graves. Minimise the chances of significant archaeological sites and / or graves being disturbed.						
Socio-Economic: Proactively manage the in-migration of potential employment seekers and in so doing mitigate impacts on existing social structures. Manage expectations. Make clear the difference between the number of temporary / construction workers and the number required for the operational phase. Draft an Economic Development Plan to align local investment with bona fide local needs.						
Ecology: To reduce the impact of the proposed PV project on ecology. Reduce impact on avifauna.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
PLANNING AND DESIGN PHASE						
<ul style="list-style-type: none"> Ensure plans are in place to minimise fire hazards and dust generation. 	Project Developer	Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	During design cycle and before construction commences.	Project Developer	During design cycle and before construction commences.	Review signed minutes of meetings or signed reports.
<ul style="list-style-type: none"> A maintenance plan for buildings and structures should be in place. Colours of buildings and structures should blend in with the landscape background where this is technically feasible and where it will not affect the functionality of the structures. Materials, coatings and paints should be chosen based on minimal reflectivity. Grouped structures should be painted in the same colour where this will not affect the functionality of the structures, to reduce visual complexity and contrast. Appropriate coloured materials should be used for structures to blend in with the backdrop of the project where technically feasible. 	Project Developer	Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	During design cycle and before construction commences.	Project Developer	During design cycle and before construction commences.	Review signed minutes of meetings or signed reports.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> ▪ Appropriate colours for smooth surfaces often need to be two to three shades darker than the background colour to compensate for shadows that darken most textured natural surfaces (apply where technically feasible). 						
<ul style="list-style-type: none"> ▪ Use an earth-coloured paint on the built elements of the facility where technically feasible. 	Project Developer	Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	During design cycle and before construction commences.	Project Developer	During design cycle and before construction commences.	Review signed minutes of meetings or signed reports.
<p>Electromagnetic interference (EMI) attenuation</p> <ul style="list-style-type: none"> ▪ The inverters, transformers, communication and control units for an array of panels should all be housed in a single shielded environment. For shielding of such an environment it must be ensured that: <ul style="list-style-type: none"> ○ Radio Frequency Interference (RFI) gasketting is placed on all the seams and doors. ○ RFI Honeycomb filtering should be placed on all ventilation openings. ▪ It is important to ensure that electrical and data cables are laid directly in the soil or properly grounded cable trays (not plastic sleeves). ▪ The use of bare copper directly in the soil for earthing is 	Project Developer	Ensure that this is taken into consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.	During design cycle and before construction commences.	Project Developer	During design cycle and before construction commences.	Review signed minutes of meetings or signed reports.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>recommended.</p> <ul style="list-style-type: none"> ▪ All data communications to and from the plant should be via fibre optic. The use of fibre optic communication has been proved to significantly reduce emissions compared to wireless or copper alternatives. Ensure Fibre optic cables either incorporate electromagnetic interference (EMI) shielding and correct electromagnetic compatibility (EMC) termination or use an EMC rated wave guide interface when entering or exiting an EMC shielded enclosure. ▪ AC brushless motors to be used for tracking motors. ▪ Contingency plan to be developed and implemented when necessary. ▪ All DC combiner boxes will be enclosed in metal and fitted with metal EMC glands. The use of metal enclosed DC combiner boxes with 360degree EMC glands will greatly reduce the emissions from these components to below that of composite boxes with plastic glands as the standard. ▪ All telecommunication infrastructure will be compliant with SKA requirements. ▪ Further reduction of inverter and/or tracker emissions through additional shielding and the installation of EMC filters. 						
<ul style="list-style-type: none"> ▪ An updated EMC Plan (based on the EMC plan that is separately attached to Part 1 of the EMPr), which identifies potential risk, mitigation measures and appropriate test and acceptable procedures during the design and construction of the facility must be developed. 	Project Developer	Ensure that this is taken into consideration and a suitable specialist (where necessary) is	During design cycle and before construction commences.	Project Developer	During design cycle and before construction commences.	Review signed minutes of meetings or signed reports.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>The updated EMC Plan must be made available by the Applicant to the Square Kilometre Array South Africa (SKA-SA) and SARA0 (South African Radio Astronomy Observatory) for perusal.</p> <ul style="list-style-type: none"> All equipment and infrastructure must comply with the Radio Astronomy Protection Levels Regulations. Transmitters established for the purposes of voice and data communication must also comply with the relevant regulations concerning the restriction of use of the radio frequency spectrum that applies in the area concerned. 		<p>appointed to consult on the EMC Plan during the planning and design phase. Review signed minutes of meetings or signed reports to ensure compliance.</p> <p>Ensure that the EMC Plan is submitted to the SKA and SARA0 for perusal.</p>				
<ul style="list-style-type: none"> Ensure that project layout avoids as many known archaeological resources and / or graves as possible. 	Project Developer	Take cognizance of the archaeological sites and graves reported in the HIA when designing the layout	During design cycle and before construction commences.	Project Developer	During design cycle and before construction commences.	Review signed minutes of meetings or signed reports.
<ul style="list-style-type: none"> Develop and implement a Workforce Recruitment Plan Develop a database of Project Affected People (PAP) and their relevant skills and experience Develop and implement a Stakeholder Engagement Plan 	Project Developer	Mitigation measures require the drafting of a document which would in each instance serve as the method through which the mitigation actions are	Once-off during the design phase.	ECO	Once-off prior to commencement of construction	Approved policy, plan and database in place and ready for auditing, with approval kept on file.

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Ecology: To reduce the impact of the proposed PV project on ecology. Reduce impact on avifauna.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		monitored.				
<ul style="list-style-type: none"> ▪ Reserve employment, where practical, for local residents ▪ Clearly define and agree upon the PAP 	Project Developer	Mitigation measures require clear statements regarding for whom work would be reserved.	Once-off during the design phase.	ECO	Once-off prior to commencement of construction	Approved policy in place and ready for auditing, with approval kept on file.
<ul style="list-style-type: none"> ▪ The proponent should engage with local NGOs, CBOs and local government structures to identify and agree upon relevant skills and competencies required in the Kenhardt community. ▪ Such skills and competencies should then be included in the Economic Development Plan. ▪ Where possible, align Economic Development Plan with Local Municipality's IDP. ▪ Delivery on the Economic Development Plan must be contractually binding on the proponent. 	Project Developer	Mitigation measures require the drafting of a document (i.e. the Economic Development Plan) which would in each instance serve as the method through which the mitigation actions are monitored.	Once-off during the design phase.	ECO	Once-off prior to commencement of construction	Approved policy in place and ready for auditing, with approval kept on file.
<ul style="list-style-type: none"> ▪ Search for and collect individuals of <i>Aloe dichotoma</i> and <i>Hoodia gordonii</i> that will be affected by the proposed activities and relocate to suitable habitat. This job has to be supervised by a suitably qualified horticulturist who understands dryland species. ▪ These species may have to be temporarily planted in a nursery. Species must be planted out during the rainy season. 	ECO Project Developer	Relocation of species to a suitable habitat. Regularly monitor the species for establishment.	Once before construction Weekly for two months	ECO Project Developer	Once before construction Weekly for two months	Review signed minutes of meetings or signed reports.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> ▪ Apply a buffer of 32 m from major drainage lines and watercourses on site. ▪ Apply a buffer of 20 m from minor drainage lines. ▪ Apply a buffer of 100 m from water points, e.g. dams. ▪ Apply a buffer of 100 m from NFEPA rivers and wetlands (National priority). ▪ Dangerous goods may not be stored within 100 m of a watercourse. ▪ The site camp must be located outside the watercourse area and buffers. ▪ All project structures and infrastructure must be located outside the buffer zones. ▪ No construction related activities, such as the site camp, storage of materials, temporary roads or ablution facilities may be located within watercourses and their buffer zones. ▪ All key habitat features should have a buffer of at least 100 m (from the edge of the key habitat feature) and all major watercourses by at least 32 m to minimize any induced ecological edge-effects and associated disturbance of fauna during the construction and operation of the project (as specified in the Avifauna and Fauna studies in Chapters 9 and 10 respectively of the EIA Report). 	Project Developer and ECO.	<p>Monitor the implementation of the buffer zone</p> <p>The layout, including the buffer areas must be clearly marked on a map and clearly displayed</p>	Once-off during the design phase	ECO	Once-off prior to commencement	Signed off and approved designs that avoids sensitive areas.

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Ecology: To reduce the impact of the proposed PV project on ecology. Reduce impact on avifauna.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
<ul style="list-style-type: none"> ▪ Night time construction should be avoided where possible. 	ECO Contractor and	Construction operation times to be monitored and managed (as well as included in the tender contract).	Weekly	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> ▪ Night lighting of the construction sites should be minimised within requirements of safety and efficiency. A lighting plan should be developed and implemented to minimize light pollution, light trespass and glare during construction 	ECO Contractor and	Complaints about night lights should be investigated and documented in a register.	Weekly or bi-weekly	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> ▪ Install lighting that will minimise light spill beyond project boundaries, avoid up-lighting and minimise lights in line with safety and security. The design and installation of lighting should include the following: <ul style="list-style-type: none"> ○ A lighting plan that documents the design, layout and technology used for lighting purposes should be prepared, indicating how nightscape impacts will be minimised; ○ A process for promptly addressing and mitigating complaints about potential lighting impacts; ○ Lighting of the facility should not exceed, in number of lights and brightness, the minimum required for safety and security; 	Project Developer	Ensure that the lighting plan is implemented prior to the operational phase	Once off	Project Developer	Once off prior to the operational phase and updated as required	Approved plan kept on file. Verify that this has been undertaken by reviewing approved plans.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> ○ Uplighting and glare (bright light) should be minimised using appropriate screening; ○ Low-pressure sodium light sources should be used to reduce light pollution; ○ Light fixtures should not spill light beyond the project boundary; ○ Timer switches or motion detectors should be used to control lighting in areas that are not occupied continuously; and ▪ Lights should be switched off when not in use whenever it is in line with safety and security. 						
<ul style="list-style-type: none"> ▪ The Contractor and ECO must be informed of the possibility of archaeological resources and graves (i.e. ensure that all personnel are aware of the potential of encountering graves and what to do if this occurs (i.e. to report any suspicious stone features prior to disturbance)). ▪ Alternatively commission an archaeologist to examine the final development footprint at least six months prior to the commencement of construction. 	Contractor / ECO ECO	Carry out Environmental Awareness Training to ensure that the Contractors are informed of the possible type of heritage features that may be encountered during the construction phase. Conduct audits of the signed attendance	Once-off training and ensure that all new staff are inducted. Monthly Once-off six months prior to construction. As required / necessary during the construction	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		registers. Appoint a professional archaeologist to examine the construction footprint. Conduct an audit to verify that the necessary permits are obtained by the archaeologist, if required.	phase.			
<ul style="list-style-type: none"> ▪ Should any archaeological sites, artefacts, paleontological fossils or graves be exposed during construction, work in the immediate vicinity of the find must be stopped, SAHRA must be informed and the services of an accredited heritage professional obtained for an assessment of the heritage resources to be made. 	Project Developer and ECO	Ensure that an appropriate specialist is appointed and the verify that the necessary heritage find protocols are implemented.	As required during construction	ECO	As required during construction	Inspections and audit reports compiled and kept on file, with non-compliance reported, as well as proof of specialist appointment.
<ul style="list-style-type: none"> ▪ An integrated waste management approach must be implemented that is based on waste minimisation. Where waste is disposed of, such disposal shall only occur at a landfill licensed in terms of the National Environment Management Waste Act, 2008 (Act 59 of 2008). ▪ Any solid waste, which will not be recycled, must be disposed of at a landfill licensed in terms of section 20 (b) of the National Environment 	ECO and Contractor	Undertake site visits and inspections to ensure that an integrated waste management approach is implemented on site	Throughout the construction phase	ECO	Monthly	Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.

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Management Waste Act, 2008 (Act No. 59 of 2008). No waste material may be left on site after construction.		and that waste disposal is undertaken correctly.				
<ul style="list-style-type: none"> Implement the Workforce Recruitment Plan. Ensure employment is reserved, where practical, for local residents. Actively use the database of PAP and their relevant skills and experience to guide local employment. 	Construction Manager and ECO	Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel with PAP database	Three times during the estimated 18 month construction period.	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Project Applicant to engage with the municipality and the police to see where they can assist in limiting social deviance. 	Construction Manager and ECO	Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.	Three times during the estimated 18 month construction period.	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Implement the Stakeholder Engagement Plan 	Construction Manager and ECO	Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with	Three times during the estimated 18 month construction period.	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		the PAP.				
<ul style="list-style-type: none"> Procure goods and services, where practical, within the study area Obtain regularly required goods and services from as large a selection of local service providers as possible 	Construction Manager and ECO	Verify purchase of local goods and services through proof of purchase.	Three times during the estimated 18 month construction period.	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Implement the Economic Development Plan 	Construction Manager and ECO	Verify that the Economic development Plan is being implemented.	Three times during the estimated 18 month construction period.	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
OPERATIONAL PHASE						
<ul style="list-style-type: none"> Workers are not allowed to collect plants for firewood or veldkos or set snares or otherwise trap and kill animals (mammals / birds / reptiles). 	Environmental Manager	Ensure that staff are given induction and environmental awareness training to discuss these aspects. New staff must also be inducted. Ensure that environmental awareness programmes are implemented	Once-off and upon new staff being appointed	Environmental Manager	Monthly	Attendance registers of the environmental awareness training kept on file

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> Minimize exterior lighting, use lights / globes of appropriate wavelength and make use of down-lighting. 	Environmental Manager	Ensure that exterior lighting is minimized by undertaking visual inspections	During the operational phase	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Monitor the effectiveness of the lighting plan to minimize light spill and glare. Lights should be switched off when not in use whenever it is in line with safety and security. 	Environmental Manager	<p>Visit surrounding neighbouring farmsteads and ensure that residents in the surrounding landscape are not affected by glaring lights from the plant.</p> <p>Complaints about night lights should be investigated and documented in a register. Investigate any complaints about night lights and document it in a register.</p> <p>Carry out visual inspections during site audits to monitor lighting, and record</p>	During the operational phase	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		and report any non-compliance.				
<ul style="list-style-type: none"> Monitor building and façade maintenance. Painted features should be maintained and repainted when colour fades or paint flakes. 	Environmental Manager	Inspect painted features and ensure that they are maintained and re-painted where required. Ensure that there is good maintenance.	As required	Environmental Manager	As required	Proof of maintenance and re-painting kept on file.
<ul style="list-style-type: none"> A maintenance plan for buildings and structures should be followed to ensure that structures remain as non-reflective as possible, and buildings remain as unobtrusive as possible. 	Environmental Manager	Ensure that the maintenance plan is being followed	During the operational phase	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Implement the Workforce Recruitment Plan. Ensure employment is reserved, where practical, for local residents. Actively use the database of PAP and their relevant skills and experience to guide local employment. 	Environmental Manager	Verify that local labour is, as far as practically possible, being used, by cross-referencing the Workforce Recruitment Plan with current recruitment practices, as well as cross-referencing employed personnel	Once a year during the operational phase.	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		with PAP database				
<ul style="list-style-type: none"> Implement the Stakeholder Engagement Plan 	Environmental Manager	Verify that Stakeholder Engagement Plan is being implemented with written proof of such engagement with the PAP.	Once a year during the operational phase.	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Procure goods and services, where practical, within the study area Obtain regularly required goods and services from as large a selection of local service providers as possible 	Environmental Manager	Verify purchase of local goods and services through proof of purchase.	Three times during the estimated 18 month construction period.	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Implement the Economic Development Plan 	Environmental Manager	Verify that the Economic development Plan is being implemented.	Three times during the estimated 18 month construction period.	Environmental Manager	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> Exotic weed control measures to be instituted through weed control programme. Regular redress of exotic weed through the use of herbicide and manual removal. 	Project Developer Project Developer	Compile weed eradication programme for a period of 12 months after the decommissioning	Weed eradication exercise to be undertaken every 6 months for a period of 12 months following	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		exercise. Appoint contractor to undertake the weed eradication programme.	decommissioning. Prior to the commencement of the decommissioning phase.			
<ul style="list-style-type: none"> Comply with relevant South African labour legislation when retrenching employees 	Contractor and ECO	Verify that retrenchment practices are compliant with south African labour legislation	Once-off during decommissioning	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> Consider appropriate succession training of locally employed staff earmarked for retrenchment during decommissioning 	Contractor and ECO	Verify that the project applicant implemented succession training of locally employed staff before the plant is decommissioned	Once-off during decommissioning	ECO	Monthly	Inspections and audit reports compiled and kept on file, with non-compliance reported.
<ul style="list-style-type: none"> All project infrastructures should be decommissioned appropriately and thoroughly to avoid misuse. Ensure that closure objectives are agreed upon with interested and affected parties. 	Contractor and ECO	Verify that decommissioned infrastructure does not pose any significant risk to the environment	Once-off at the end of decommissioning	ECO	Once-off	Inspections and audit reports compiled and kept on file, with non-compliance reported.

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		or the people living in the environment.				

8 APPENDIX A – ROLES AND RESPONSIBILITIES

Responsible Person(s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u> The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p>

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	<p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <p><u>Responsibilities</u> The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer (dEO)	<p><u>Role</u> The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p>

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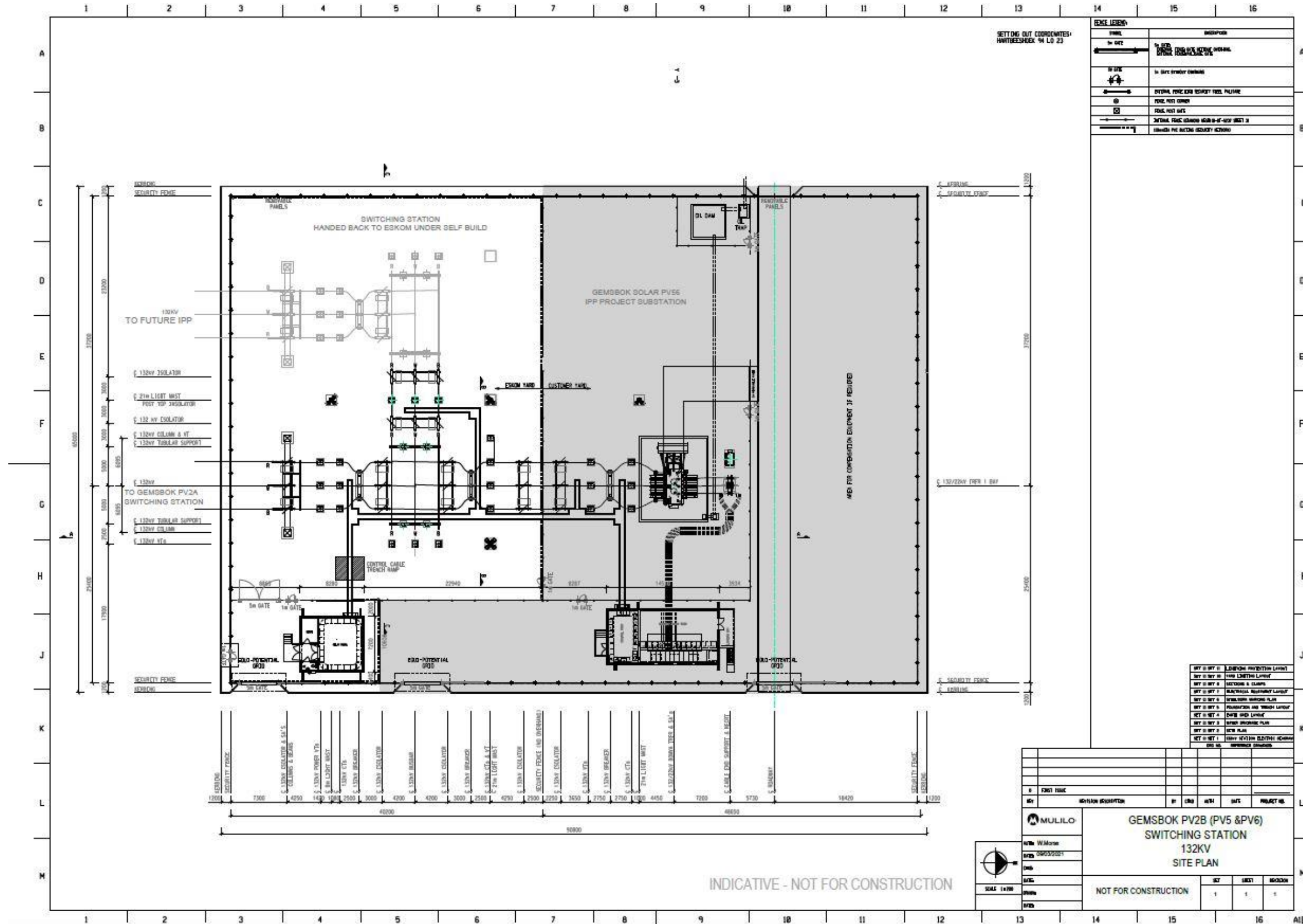
Responsible Person(s)	Role and Responsibilities
	<p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p>

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

9 APPENDIX B – LAYOUT OF THE ON-SITE SUBSTATION (IPP SUBSTATION AND SWITCHING STATION)



10 APPENDIX C – PRE-APPROVED GAZETTED EMPr FOR SUBSTATION DEVELOPMENT (GN 435)

**PRE-APPROVED GENERIC EMPr TEMPLATE FOR SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY GOVERNMENT GAZETTE 42323,
GOVERNMENT NOTICE 435**

SECTION 5: IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

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

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

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

5.1. Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All staff must receive environmental awareness training prior to commencement of the activities; – The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; – Refresher environmental awareness training is available as and when required; – All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; – The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. 						

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Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response procedures; d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. - A record of all environmental awareness training courses undertaken as part of the EMPr must be available; - Educate workers on the dangers of open and/or unattended fires; - A staff attendance register of all staff to have received environmental awareness training must be available. - Course material must be available and presented in appropriate languages that all staff can understand. 						

5.2. Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; 						

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Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						

5.3. Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; - Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and - Unauthorised access and development related activity inside access restricted areas is prohibited. 						

5.4. Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; - All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition - All contractors must be made aware of all these access routes. 						

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Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; - Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; - In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on a pre-planned and approved roads. 						

5.5. Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; - Any temporary fencing to restrict the movement of live-stock must only be erected 						

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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
with the permission of the landowner. – All fencing must be developed of high quality material bearing the SABS mark; – The use of razor wire as fencing must be avoided; – Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; – On completion of the development phase all temporary fences are to be removed; – The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.						

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; – 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. – 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.						

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5.7. Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, 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. 						

5.8. Solid and hazardous waste management

Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; 						

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Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Certificates of safe disposal for general, hazardous and recycled waste must be maintained.						

5.9. Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; – In the event of a spill, prompt action must be taken to clear the polluted or affected areas; – Where possible, no development equipment must traverse any seasonal or permanent wetland – No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; – Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; – There must not be any impact on the long term morphological dynamics of watercourses or estuaries; – Existing crossing points must be favored over the creation of new crossings (including temporary access) – When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; b) No altering of the bed, banks, course or characteristics of a watercourse c) 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; d) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and 						

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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
e) 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
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas. 						

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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
Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.						

5.11. Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						

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5.12. Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences. 						

5.13. Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 						

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5.14. Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 						

5.15. Prevention of disease

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

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5.16. *Emergency procedures*

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

5.17. *Hazardous substances*

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is 						

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Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>stored in appropriate storage tanks or in bowsers;</p> <ul style="list-style-type: none"> - 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); - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and wastewater management and 5.8 for solid and hazardous waste management. 						

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5.18. *Workshop, equipment maintenance and storage*

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

5.19. *Batching plants*

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; 						

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Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; - Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						

5.20. Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						

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5.21. *Blasting*

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 						

5.22. *Noise*

Impact Management outcome: Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 						

5.23. *Fire prevention*

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; 						

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Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swap of contact details between ECO and FPA. 						

5.24. Stockpiling and stockpile areas

Impact management outcome: Reduce erosion and sedimentation as a result of stockpiling.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 						

5.25. Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; - Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; 						

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Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation; - All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 						

5.26. Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage; and - Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. 						

5.27. Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

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Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Batching of cement to be undertaken in accordance with Section 5.19: Batching plants; and - Residual solid waste must be disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

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

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Management of dust must be conducted in accordance with Section 5. 20: Dust emissions; - Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.29. Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts - Emergency repairs due to breakages of equipment must be managed in accordance with Section 5. 18: Workshop, equipment maintenance and storage and Section 5.16: Emergency procedures. 						

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5.30. *Cabling and Stringing*

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous Management; - Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances. 						

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

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.32. *Socio-economic*

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 						

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5.33. *Temporary closure of site*

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; - Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; - Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; - Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; - Structures vulnerable to high winds must be secured; - Wind and dust mitigation must be implemented; - Cement and materials stores must have been secured; - Toilets must have been emptied and secured; - Refuse bins must have been emptied and secured; - Drip trays must have been emptied and secured. 						

5.34. *Dismantling of old equipment*

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; - Oil containing equipment must be stored to prevent leaking or be stored on drip trays; - All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; - Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent 						

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Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
spillage and pollution of the environment; – The Contractor must also be equipped to contain and clean up any pollution causing spills; and – Disposal of unusable material must be at a licensed waste disposal site.						

5.35. Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; – All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 – All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; – Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; – Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; – Rehabilitation of access roads outside of farmland; – Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; – Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); – Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; – Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; – Subsoil must be ripped before topsoil is placed; – The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; 						

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Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						

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.