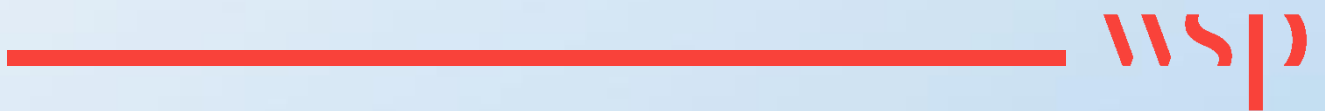


Appendix K

EMPR





Merafong Energy (Pty) Ltd

MERAFONG SOLAR PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE

Draft Environmental Management Programme





Merafong Energy (Pty) Ltd

MERAFONG SOLAR PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE

Draft Environmental Management Programme

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 41106080

DATE: JUNE 2025



Merafong Energy (Pty) Ltd

MERAFONG SOLAR PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE

Draft Environmental Management Programme




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EAP CV

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1 INTRODUCTION

Merafong Energy (Pty) Ltd (Merafong) has appointed WSP Group Africa Pty Ltd (WSP), as an independent Environmental Assessment Practitioner (EAP) to submit a registration application for the registration of the Merafong Photovoltaic (PV) Solar Energy Facility (SEF) and associated infrastructure on various farm portions. The proposed project is situated approximately 10km east of Carletonville, within the jurisdiction of the Merafong City Local Municipality, in the West Rand District Municipality, Gauteng Province.

This Site Sensitivity Verification Report (SSVR) forms part of the registration process in terms of “*Norm for the Exclusion of the Development and Expansion of Solar Photovoltaic Facilities in Areas of Low or Medium Environmental Sensitivity*”. Registration in terms of this norm allows for the exclusion from the requirement to obtain an Environmental Authorisation (EA) from the competent authority for listed and specified activities identified in paragraph 7 of the Norm.

This exclusion will apply only to activities identified in terms of section 24(2)(a) and (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), subject to compliance with the Norm for the Exclusion of the Development and Expansion of Solar Photovoltaic Facilities in Areas of Low or Medium Environmental Sensitivity, as set out in the Schedule, while the requirements of any other relevant legislation remain applicable.

1.1 LOCATION OF THE PROPOSED PROJECT

The proposed study area is situated east of Carletonville and west of Westonaria within the Merafong City Local Municipality in the West Rand District Municipality of Gauteng, South Africa. The proposed Merafong SEF will be developed within a project area of approximately 311 hectares (ha). The site will be accessed via N12 to the R501, and the R559 as illustrated in **Figure 1-1** and **Figure 1-2**.

MERAFONG SOLAR PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE
Project No.: 41106080
Merafong Energy (Pty) Ltd

MERAFONG SOLAR PHOTOVOLTAIC FACILITY AND ASSOCIATED INFRASTRUCTURE
Project No.: 41106080
Merafong Energy (Pty) Ltd

1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP was appointed in the role of Independent EAP to undertake the registration process for the proposed project. The CV of the EAP is available in **Appendix A. Table 1-1** details the relevant contact details of the EAP.

Table 1-1 – Details of the EAP

EAP:	WSP Group Africa (Pty) Ltd
Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com
EAP Qualifications:	<ul style="list-style-type: none"> ■ Masters in Environmental Management, University of the Free State ■ B Tech, Nature Conservation, Technikon SA ■ National Diploma in Nature Conservation, Technikon SA
EAPASA Registration Number:	EAPASA (2019/1005)

1.3 PURPOSE OF THE EMPR

An Environmental Management Programme (EMPr) is defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the project are enhanced.”

This EMPr has been compiled in accordance with Appendix 4 of GNR 982, in compliance with section 24N of NEMA, with the purpose of ensuring that negative impacts are reduced, and positive effects are enhanced through a process of continual improvement, during the construction, operational and decommissioning phases of Merafong SEF.

To facilitate compliance to the EMPr by appointed contractors and sub-contractors, it is required that all onsite personnel are aware of the requirements of the EMPr as well as the prescribed penalties, should a non-conformance be identified during the construction, operation and decommissioning activities.

Further to the above, appointed contractors and sub-contractors will also be required to comply with all relevant legislation and standards.

A hard copy of the EMPr must always be in the site office and made available to officials at request.

1.3.1 EMPr OBJECTIVES

The EMPr has the following objectives:

- Identify mitigation measures and environmental specifications which are required to be implemented for the planning, construction and rehabilitation, operation, and decommissioning phases of the project in order to manage and minimise the extent of potential environmental impacts associated with the facility;
- Ensure that all the phases of the proposed project do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced;
- Identify entities responsible for the implementation of the measures and outline functions and responsibilities;
- Create management structures that address the concerns and complaints of interested and affected parties (I&APs) with regards to the proposed project;
- Propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation; Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Train onsite personnel with regard to their environmental obligations; and
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the EMPr process.

1.3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, the Merafong SEF must comply with all relevant legislation and standards and make all personnel aware of the requirements of the EMPr, as well as the prescribed penalties, should a non-conformance be identified during the different phases of the proposed project.

It is recommended that environmental objectives (as outlined in this document) be emphasised as minimum requirements. Objectives include:

- Encourage good management practices through planning and commitment to environmental issues; and
- Provide rational and practical environmental guidelines to:
 - Minimise disturbance of the natural environment;
 - Minimise fugitive emissions;
 - Minimise impact of added traffic into the area;
 - Ensure surface and groundwater resource protection;
 - Prevent or minimise all forms of pollution;
 - Protect indigenous flora and fauna;
 - Prevent soil erosion;
 - Promote sustainable use of resources;
 - Adopt the best practical means available to prevent or minimise adverse environmental impacts;
 - Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
 - Promote the reduction, reuse, recycling and recovery of waste;
 - Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste;

- Describe all monitoring procedures required to identify impacts on the environment;
- Define how the management of the environment is reported and performance evaluated; and
- Train onsite personnel with regard to their environmental obligations.

1.4 STRUCTURE OF THE EMPR

For the purposes of demonstrating legal compliance, **Table 1-2** cross-references the sections within the EMPr with the requirements as per Appendix 4 of GNR 326 of 2017.

Table 1-2 – Legislation Requirements as detailed in Appendix 4 of GNR 326

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(a)	details of-	
	(i) the EAP who prepared the EMPr; and	Section 1.2
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.2 Appendix A
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2 Section 6
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;	Section 3 Appendix B
(d)	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	Section 3.2 Section 6
	(i) planning and design;	
	(ii) pre-construction activities;	
	(iii) construction activities;	
	(iv) rehabilitation of the environment after construction and where applicable post closure; and	
	(v) where relevant, operation activities;	
(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -	Section 6
	(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	
	(ii) comply with any prescribed environmental management standards or practices;	
	(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
	(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5 Section 6
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 5
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	Section 5 Section 6
(m)	an environmental awareness plan describing the manner in which-	Section 5.2
	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(n)	any specific information that may be required by the competent authority	N/A

2 PROJECT DESCRIPTION

This section provides a description of the location of the project site and a summary of the project details. The descriptions encompass the activities to be done during the construction, operational and decommissioning (should it be decided that the facility will be decommissioned) phases, as well as the consideration for the need and desirability of the project in accordance with Appendix 3 of GNR 326.

2.1 LOCATION OF THE PROPOSED PROJECT

The proposed study area is situated east of Carletonville and west of Westonaria within the Merafong City Local Municipality in the West Rand District Municipality of Gauteng, South Africa. The proposed Merafong SEF will be developed within a project area of approximately 311 hectares (ha).

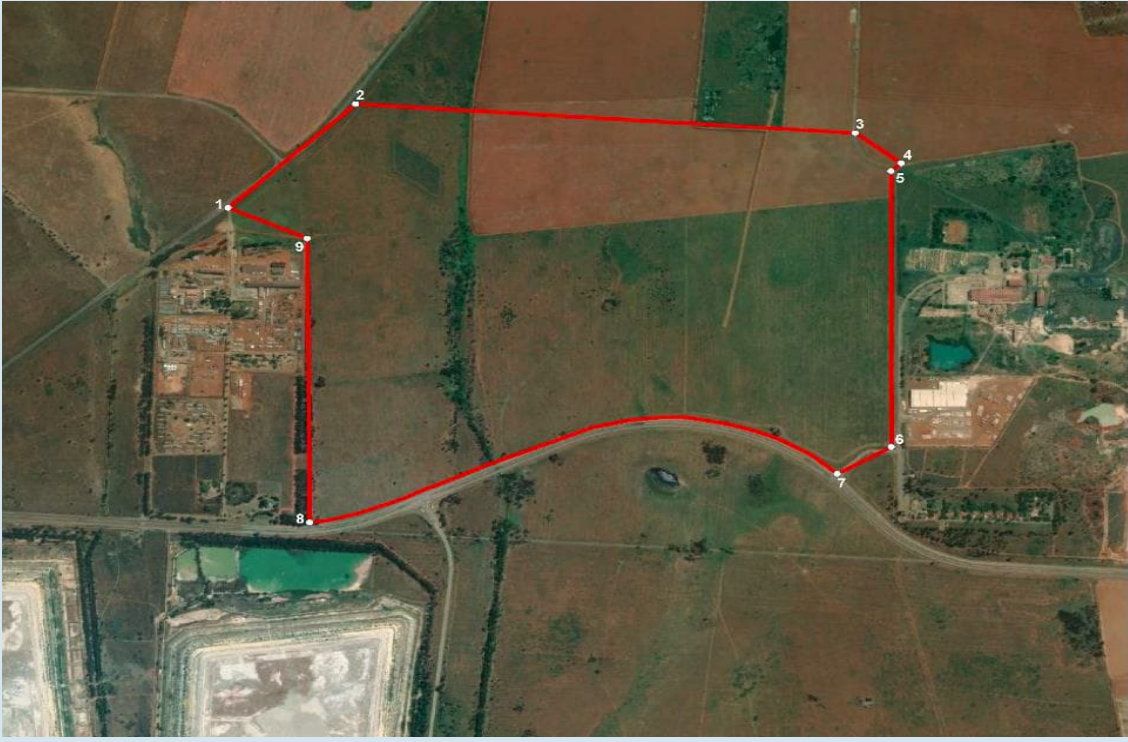
The details of the property associated with the Proposed Project, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 2-1**. The Amended development footprint and associated co-ordinates are outlined in **Table 2-2**.

Table 2-1 – Merafong SEF Affected Farm Portions

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
	
Driefontein 355	T0IQ00000000035500008
Portions 4, 8, 10, 11, 12, 13, and 15	T0IQ00000000035500015

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
	T0IQ00000000035500013
	T0IQ00000000035500010
	T0IQ00000000035500011
	T0IQ00000000035500012
	T0IQ00000000035500004
Smallplaats 353	T0IQ00000000035300000
Vlakplaats 112	T0IQ00000000011200000

Table 2-2 - Development Footprint - Co-ordinates

Component	Longitude	Latitude
		
1	26° 20' 55.589" S	27° 30' 03.131" E
2	26° 20' 40.964" S	27° 30' 19.563" E
3	26° 20' 45.049" S	27° 31' 23.933" E
4	26° 20' 49.298" S	27° 31' 29.843" E
5	26° 20' 50.421" S	27° 31' 28.528" E
6	26° 21' 29.284" S	27° 31' 28.529" E

Component	Longitude	Latitude
7	26° 21' 33.039" S	27° 31' 21.596" E
8	26° 21' 39.898" S	27° 30' 13.607" E
9	26° 20' 59.887" S	27° 30' 13.337" E

2.2 PROJECT INFRASTRUCTURE

The proposed Merafong SEF will be developed with a contracted capacity of 140 MW, thus allowing for up to 100 MW for export from the facility. The proposed development footprint (buildable area) is approximately 264 hectares (ha) (subject to finalisation based on technical and environmental requirements), and the extent of the project area is approximately 311 ha. The development footprint includes the Solar PV field and all associated infrastructures as indicated in Error! Reference source not found.

The proposed Merafong SEF will comprise the following key components:

- Solar Field;
- Back-to-Back Substation;
- Operations and Maintenance (O&M) Building Infrastructure;
- Construction Camp Laydown;
- Access Road; and
- Associated Infrastructure

2.2.1 SOLAR FIELD

- PV Modules, which convert the solar radiation into direct current (DC);
- PV panels will have a maximum height of 5 m, and could be mounted on fixed tilt, single axis tracking or dual axis tracking mounting structures or Bifacial Solar Modules with a maximum combined height of up to 10m (i.e. total height of structure and panel will be up to 10m). Where desirable and feasible, Agri-Voltaic principles could be considered in the final design.

2.2.2 SITE SUBSTATION

- The switching station of approximately 1.5ha. The substation will consist of a high voltage substation yard to allow for multiple up to 132kV feeder bays and transformers, control building telecommunication, and other substation components as required.

2.2.3 OPERATION AND MAINTENANCE BUILDING INFRASTRUCTURE

- Operations and maintenance (O&M) building infrastructure will be required to support the functioning of the SEF and for services required by operations and maintenance staff. The O&M building infrastructure will be located in close proximity to the site substation and will include:
- Operations building of approximately 200m²;
- Workshop and stores area of approximately 300m²; and
- Refuse area for temporary waste storage and septic and/or conservancy tanks to service ablution facilities.

2.2.4 CONSTRUCTION CAMP LAYDOWN

- Temporary infrastructure includes:

- A construction camp area and concrete batching plant (up to 0.6 ha footprint);

The site will also accommodate a cement silo;

- Temporary laydown area (up to 3.15 ha) for the storage of equipment, materials, fuels, cement, chemicals etc; and
- Sewage: septic and/or conservancy tanks and portable toilets.

2.2.5 ACCESS ROAD

- Internal gravel roads of approximately 8km will be developed;
- Where required for turning circle/bypass areas, access or internal roads may be up to 20m to allow for larger component transport.

2.2.6 ASSOCIATED INFRASTRUCTURE

- The solar arrays are typically connected to each other in strings, which are in turn connected to converters/inverters that convert DC to AC. The medium voltage collector system will comprise of cables up to and including 33kV that run underground, except where a technical assessment suggest that overhead lines are required, within the facility connecting the solar PV arrays to the onsite substation;
- Fencing of up to 4m high around the construction camp, O&M building and Site substation areas; and
- Any other associated infrastructure, such as:
 - Fencing around the facility (or where required) and lighting,
 - Lightning protection
 - Telecommunication infrastructure
 - Storm water channels
 - Water pipelines
 - Offices
 - Operational control centre
 - Operation and Maintenance Area / Warehouse / workshop
 - Ablution facilities
 - A gate house
 - Control centre
 - Offices
 - Warehouses
 - Security building
 - A visitor's centre; and
 - Substation building

The proposed development footprint (buildable area) is approximately 264ha (subject to finalisation based on technical and environmental requirements), and the extent of the project area is approximately 311ha. The development footprint includes the solar PV arrays and all associated infrastructures as outlined above.

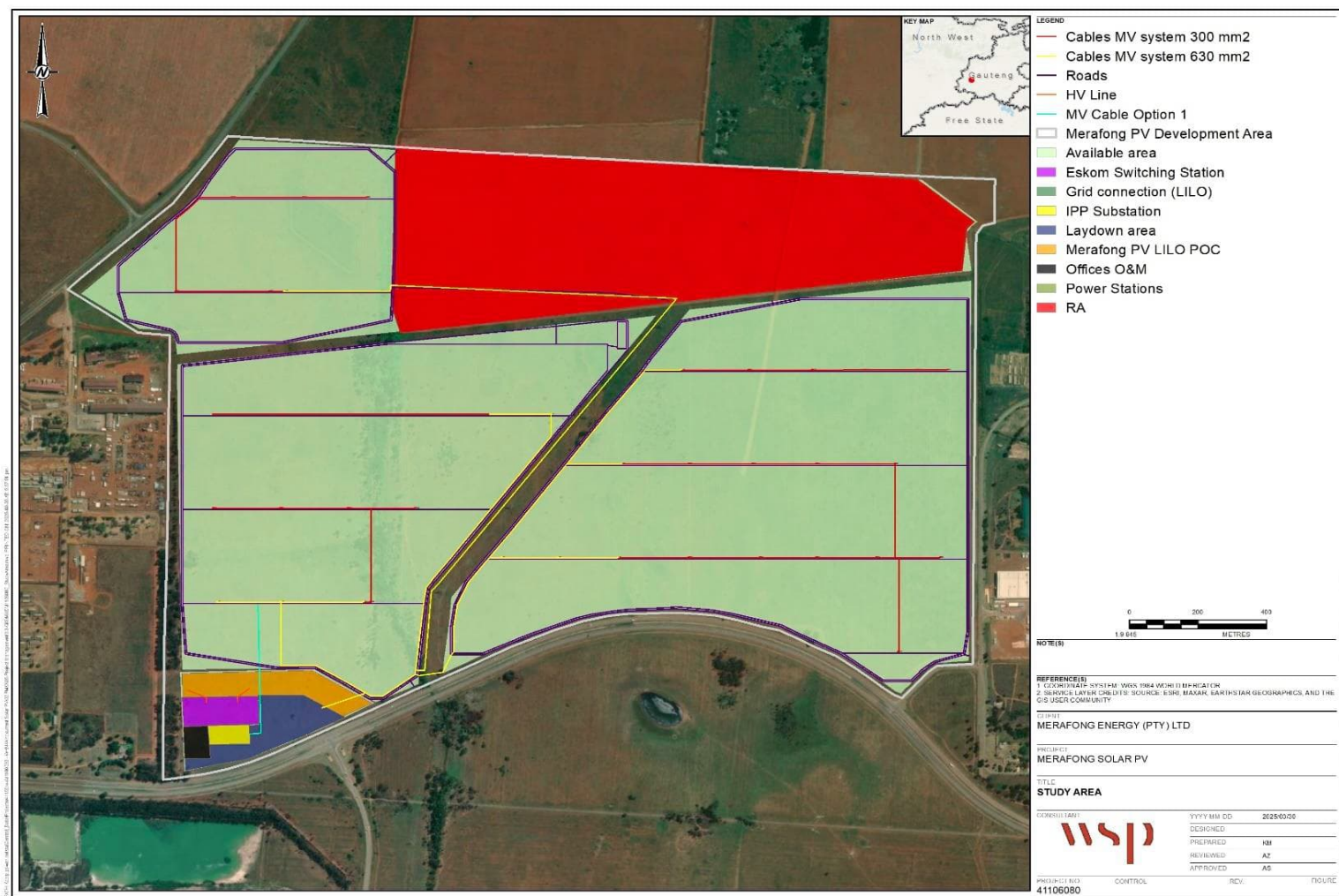


Figure 2-1 - Merafong SEF Final Layout

2.3 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

2.3.1 CONSTRUCTION PHASE

The construction process will follow industry standard methods and techniques. Key activities associated with the construction phase are described in **Table 2-3**.

Table 2-3 – Construction activities

Activity	Description
Establishment access and internal roads	Internal gravel roads will be developed. The roads will be between 5m and 8m wide and may require widening to ensure that it is suitable for use.
Site preparation and establishment	Site establishment will include clearing of vegetation and any bulk earthworks that may be required.
Transport of components and equipment to site	All construction material (i.e. PV support structure materials), machinery and equipment (i.e. graders, excavators, trucks, cement mixers etc.) will be transported to site utilising the national, regional and local road network. Large components (such as substation transformers) may be defined as abnormal loads in terms of the Road Traffic Act (No. 29 of 1989). In such cases a permit may be required for the transportation of these loads on public roads.
Establishment of a laydown area on site	Construction materials, machinery and equipment will be kept at relevant laydown and/or storage areas. A laydown area of approximately 3.15 ha has been proposed for this project. The laydown area will also be utilised for the assembly of the PV panels. The laydown area will limit potential environmental impacts associated with the construction phase by limiting the extent of the activities to one designated area.
Erection of PV Panels	The PV panels will be arranged in arrays. The frames will be fixed onto vertical posts that will be driven into ground utilising the relevant foundation method identified during the geotechnical studies, including potentially employing concrete foundations for the panel frames. PV panels will have a maximum height of 5m, and could be mounted on fixed tilt, single axis tracking or dual axis tracking mounting structures or Bifacial Solar Modules with a maximum combined height of up to 10m (i.e. total height of structure and panel up to 10m). Where desirable and feasible, Agri-Voltaic principles could be considered in the final design.
Construction of substation and inverters	The facility output voltage will be stepped up from medium voltage to high voltage in the transformer. The medium voltage cables will be run underground in the facility (except where a technical assessment suggest that overhead lines are applicable) to a common point before being fed to the onsite substation.
Establishment of ancillary infrastructure	Ancillary infrastructure will include the following: <ul style="list-style-type: none"> Access roads; Perimeter roads; Below ground electrical cables; Above ground overhead lines; Meteorological Station; O&M Building including control room, server room, security equipment room, offices, boardroom, kitchen, and ablution facilities); Spares Warehouse and Workshop; Hazardous Chemical Store; Security Building; Parking areas and roads; Temporary laydown areas; Temporary concrete batching plant Construction camps and temporary laydown areas; and

Activity	Description
	<ul style="list-style-type: none"> Onsite substations.
Rehabilitation	Once all construction is completed on site and all equipment and machinery has been removed from the site, the site will be rehabilitated.

2.3.2 OPERATIONAL PHASE

During operation the key activities will include inspection and maintenance of the solar panels, substations and other associated infrastructure.

2.3.3 DECOMMISSIONING PHASE

The decommissioning phase will include activities similar to that of the construction phase as indicated in **Table 2-3**.

3 ENVIRONMENTAL SENSITIVITY

3.1 SITE SENSITIVITY VERIFICATION SUMMARY

Specialist assessments were conducted in accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes, which were promulgated in Government Notice No. 320 of 20 March 2020 and in Government Notice No. 1150 of 30 October 2020 (i.e. “the Protocols”), or Appendix 6 of the EIA Regulations, depending on which legislation apply to the assessment under consideration. A summary of the DFFE screening tool, the applicable legislation as well as the specialist sensitivity verification are detailed in **Table 3-1** below.

Table 3-1 - Assessment Protocols and Site Sensitivity Verification Summary

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more</i>	High Sensitivity	Medium Sensitivity
Terrestrial Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very High Sensitivity	Low Sensitivity
Aquatic Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity</i>	Very High Sensitivity	Low Sensitivity
Plant Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species</i>	Medium Sensitivity	Low Sensitivity
Animal Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	Low Sensitivity
Avifauna Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Low Sensitivity	Low Sensitivity
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Low Sensitivity	Low Sensitivity
Palaeontology Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity	Low Sensitivity

3.2 SENSITIVITY MAPPING

A preliminary consolidated environmental sensitivity map is included in **Figure 3-1**.

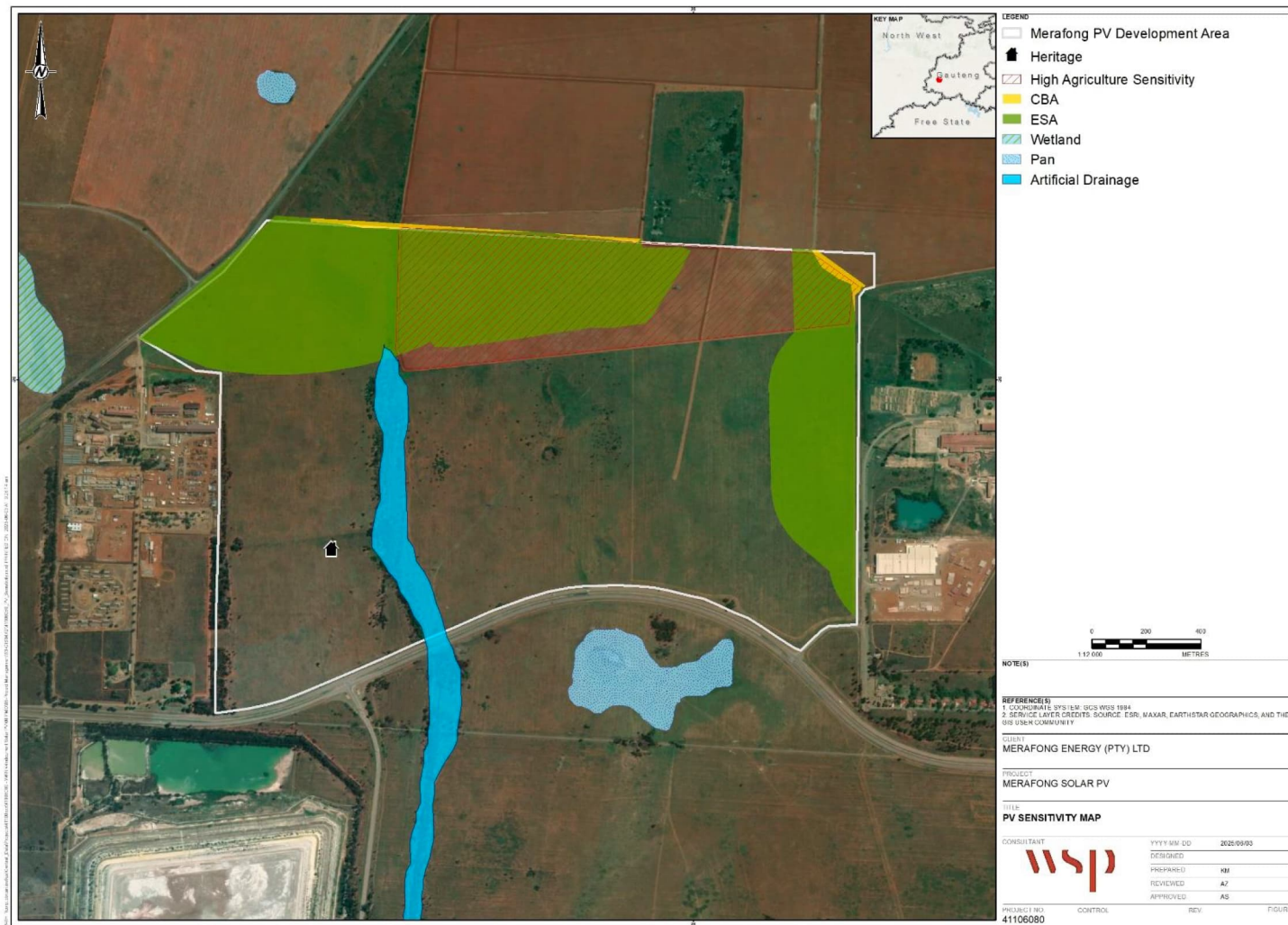


Figure 3-1 – Merafong SEF Final Layout Sensitivity Map

3.3 APPLICABLE DOCUMENTATION

The following documents are to be read in conjunction with the EMPr:

- SSVR for the Merafong SEF; and
- Registration issued by the DFFE in terms of the Norm (once issued).

4 GOVERNANCE FRAMEWORK

4.1 NATIONAL LEGAL AND REGULATORY FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Different authorities at both national and regional levels carry out environmental protection functions. The applicable legislation and policies are shown in **Table 4-1**

Table 4-1 - Applicable National and Provincial Legislation

Legislation	Description of Legislation and applicability
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld on an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998)	<p>In terms of Section 24(2) of the NEMA, the Minister may identify activities, which may not commence without prior authorisation. The Minister thus published GNR 983 (as amended) (Listing Notice 1), GNR 984 (as amended) (Listing Notice 2) and GNR 985 (as amended) (Listing Notice 3) listing activities that may not commence prior to authorisation.</p> <p>The regulations outlining the procedures required for authorisation are published in the EIA Regulations of 2014 (GNR 982) (as amended). Listing Notice 1 identifies activities that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity.</p> <p>WSP undertook a legal review of the listed activities according to the proposed project description to identify the NEMA listed activities considered applicable to the development.</p> <p>The proponent is applying to be excluded from the requirement to obtain an environmental authorisation prior to commencement, as outlined in the "Norm for the Exclusion of the Development and Expansion of Solar Photovoltaic Facilities in Areas of Low or Medium Environmental Sensitivity".</p> <p>The listed activities that the client wishes to be excluded from are outlined in Section 4.2 below.</p>
Norm for the Exclusion of the Development and Expansion of Solar Photovoltaic Facilities in Areas of Low or Medium Environmental Sensitivity	<p>The Norms provides rules under which activities associated with the development and expansion of battery storage facilities identified in terms of section 24(2)(a) and (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and contained in the Environmental Impact Assessment Regulations Listing Notice 1, 2 or 3 of 2014, promulgated under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), are excluded from the requirement to obtain an environmental authorisation prior to commencement, while meeting the objectives of the National Environmental Management Act, 1998 (Act No. 107 of 1998).</p> <p>One of the guidance tools developed is the national web based environmental screening tool, which provides guidance on environmental sensitivities of a specific geographical location or site related to various identified environmental themes. Environmental sensitivities are rated as "very high", "high", "medium" or "low".</p> <p>This exclusion will apply only to activities identified in terms of section 24(2)(a) and (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), subject to compliance with the Norm for the Exclusion of the Development and Expansion of Solar Photovoltaic</p>

Legislation	Description of Legislation and applicability
	Facilities in Areas of Low or Medium Environmental Sensitivity, as set out in the Schedule, while the requirements of any other relevant legislation remain applicable.
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (GNR 320, 20 March 2020 and GNR 1150, 30 October 2020)	<p>The protocols provide the criteria for specialist assessment and minimum report content requirements for impacts for various environmental themes for activities requiring environmental authorisation.</p> <p>The protocols replace the requirements of Appendix 6 of the EIA Regulations, 2014, as amended. The assessment and reporting requirements of the protocols are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (screening tool). The Screening Report was generated for the project on 10/03/2025.</p> <p>The following environmental themes were applicable to the Merafong SEF:</p> <ul style="list-style-type: none"> ■ Agriculture Theme ■ Animal Species Theme ■ Aquatic Biodiversity Theme ■ Archaeological and Cultural Heritage Theme ■ Avian Theme ■ Civil Aviation Theme ■ Defence Theme ■ Landscape (Solar) Theme ■ Palaeontology Theme ■ Plant Species Theme ■ Radio Frequency Interference (RFI) Theme ■ Terrestrial Biodiversity Theme
National Environmental Management: Waste Act (59 of 2008) (NEM:WA)	<p>This Act provides for regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act also provides for the licensing and control of waste management activities through GNR. 921 (2013): List of Waste Management Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment.</p> <p>The proposed project does not constitute a Listed Activity requiring a Waste Management Licence (WML) as defined in GNR 921.</p> <p>The Environmental Management Programme (EMPr) that will accompany the SSV Report, will include reasonable measures for the prevention of pollution and good international industry practice (GIIP).</p>
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	<p>The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI).</p> <p>SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems.</p> <p>According to the NEMBA Threatened Ecosystems (2021), Carletonville Dolomite Grassland is not listed as a threatened ecosystem.</p>
National Environmental Management Protected Areas Act (No. 57 of 2003)	<p>The purpose of the National Environmental Management Protected Areas Act (No. 57 of 2003) (NEMPAA) is to, inter alia, provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. To this end, it provides for the declaration and management of various types of protected areas.</p> <p>Section 50(5) of NEMPAA states that "no development, construction or farming may be permitted in a nature reserve or world heritage site without the prior written approval of the management authority." There are no protected areas within the study area.</p>

Legislation	Description of Legislation and applicability
	<p>No nationally protected areas occur in close proximity to the proposed Project area.</p> <p>The Project areas does coincide with areas that have been identified as Priority Focus Areas as part of the National Protected Area Development Strategy (2016).</p>
Renewable Energy Development Zones and Strategic Transmission Corridors	<p>On 16 February 2018, the DFFE gazetted the Renewable Energy Development Zones (REDZs) and Strategic Transmission Corridors and Procedures for the Assessment of Large-scale Wind and Solar Photovoltaic Energy Development Activities (GN 114) and Grid Infrastructure (GN 113). Subsequently, on 26 February 2021 a further three REDZ were gazetted (GN 142).</p> <p>The procedure allows for wind and solar PV activities within the eight REDZs and electricity grid development within the five power corridors to be subjected to a BA and not a full S&EIR process. In addition, the timeframes associated with the decision on the application is reduced from 107 days to 57 days.</p> <p>The Merafong SEF is not located within a REDZ but is located within the Central Strategic Corridor.</p>
The National Heritage Resources Act (No. 25 of 1999)	<p>The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA), and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development.</p> <p>Part 2 of the NHRA details specific activities that require a Heritage Impact Assessment (HIA) that will need to be approved by SAHRA. Parts of Section 35, 36 and 38 apply to the proposed project, principally:</p> <ul style="list-style-type: none"> ■ Section 35 (4) - No person may, without a permit issued by the responsible heritage resources authority- ■ destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; ■ destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite. ■ Section 38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as- <ul style="list-style-type: none"> • any development or other activity which will change the character of a site— (i) exceeding 5 000 m2 in extent, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. <p>In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the proposed Merafong SEF facility, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).</p> <p>A Phase 1 Heritage Impact Assessment has been carried out by a suitably qualified specialist, Beyond Heritage, revealing:</p> <p>The field survey of the PV area noted high levels of surface disturbances from both agricultural and mining activities. The PV area is considered to be of low heritage potential and only a degraded cement foundation of low significance was identified. No other surface finds were present within the PV area.</p>

Legislation	Description of Legislation and applicability
	To comply with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and with cognisance of known heritage resources in the area, the proposed project will be loaded onto the SAHRIS portal for comment by the provincial Heritage Resource Agency.
Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	<p>In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards, SABS) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act 73 of 1989 (ECA), provisions were made to control noise from a National level in the form of the Noise Control Regulations (GNR 154 of January 1992). In later years, the ECA was replaced by the National Environmental Management Act 107 of 1998 (NEMA) as amended. The National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) was published in line with NEMA and contains noise control provisions under Section 34:</p> <p>(1) The minister may prescribe essential national standards –</p> <p>(a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or</p> <p>(b) for determining –</p> <p>(i) a definition of noise; and</p> <p>(ii) the maximum levels of noise.</p> <p>(2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards.</p> <p>Under NEMAQA, the Noise Control Regulations were updated and are to be applied to all provinces in South Africa. The Noise Control Regulations give all the responsibilities of enforcement to the Local Provincial Authority, where location specific by-laws can be created and applied to the locations with approval of Provincial Government. Where province-specific regulations have not been promulgated, acoustic impact assessments must follow the Noise Control Regulations.</p> <p>Furthermore, NEMAQA prescribes that the Minister must publish maximum allowable noise levels for different districts and national noise standards. These have not yet been accomplished and as a result all monitoring and assessments are done in accordance with the South African National Standards (SANS) 10103:2008 and 10328:2008.</p>
Conservation of Agricultural Resources Act (No. 43 of 1983)	<p>The Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) provides for the implementation of control measures for soil conservation works as well as alien and invasive plant species in and outside of urban areas.</p> <p>In terms of the amendments to the regulations under the CARA, landowners are legally responsible for the control of alien species on their properties. Various Acts administered by the DFFE and the DWS, as well as other laws (including local by-laws), spell out the fines, terms of imprisonment and other penalties for contravening the law. Although no fines have yet been placed against landowners who do not remove invasive species, the authorities may clear their land of invasive alien plants and other alien species entirely at the landowners' cost and risk.</p> <p>The CARA Regulations with regards to alien and invasive species have been superseded by NEMBA Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014.</p>
Occupational Health and Safety Act (No. 85 of 1993)	The National Occupational Health and Safety Act (No. 85 of 1993) (OHSA) and the relevant regulations under the Act are applicable to the proposed project. This includes the Construction Regulations promulgated in 2014 under Section 43 of the Act. Adherence to South Africa's OHSA and its relevant Regulations is essential.
National Energy Act (No. 34 of 2008)	The National Energy Act aims to ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy in support of

Legislation	Description of Legislation and applicability
	<p>economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors.</p> <p>The main objectives of the Act are to:</p> <ul style="list-style-type: none"> ■ Ensure uninterrupted supply of energy to the Republic; ■ Promote diversity of supply of energy and its sources; ■ Facilitate effective management of energy demand and its conservation; ■ Promote energy research; ■ Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy; ■ Ensure collection of data and information relating to energy supply, transportation and demand; ■ Provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and a sustainable development; ■ Provide for certain safety, health and environment matters that pertain to energy; ■ Facilitate energy access for improvement of the quality of life of the people of Republic; ■ Commercialise energy-related technologies; ■ Ensure effective planning for energy supply, transportation, and consumption; and ■ Contribute to sustainable development of South Africa's economy. <p>In terms of the act, the Minister of Energy is mandated to develop and, on an annual basis, review and publish the Integrated Energy Plan (IEP) in the Government Gazette. The IEP analyses current energy consumption trends within different sectors of the economy (i.e. agriculture, commerce, industry, residential and transport) and uses this to project future energy requirements, based on different scenarios. The IEP and the Integrated Resource Plan are intended to be updated periodically to remain relevant. The framework is intended to create a balance between energy demand and resource availability so as to provide low-cost electricity for social and economic development, while taking into account health, safety and environmental parameters.</p>
Electricity Regulation Act (No. 4 of 2006)	<p>The Electricity Regulation Act (No. 4 of 2006) (ERA) aims to:</p> <ul style="list-style-type: none"> ■ Achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa; ■ Ensure that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic; ■ Facilitate investment in the electricity supply industry; ■ Facilitate universal access to electricity; ■ Promote the use of diverse energy sources and energy efficiency; ■ Promote competitiveness and customer and end user choice; and ■ Facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public. <p>The Act establishes a National Energy Regulator as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licenses and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated.</p>
The Gauteng Provincial Employment, Growth and Development Strategy (GEGDS)	<p>The Gauteng Provincial Employment, Growth and Development Strategy (GEGDS) identifies the need for creating accessible and decent work within a growing, sustainable, and inclusive economy as a priority for the province. The GEGDS aims to address the deep structural weaknesses within the economy that has yielded persistent high unemployment and excluded marginalized populations despite the economic growth of the region.</p> <p>Key aims of GEGDS:</p> <ul style="list-style-type: none"> ■ Provide a framework within which relevant government departments can develop and/or refine their strategic policy interventions or drivers, while creating decent work and building a growing, inclusive economy.

Legislation	Description of Legislation and applicability
	<ul style="list-style-type: none"> Identify effective interventions for provincial government to mitigate the impact of economic crises while initiating programmes that can maximise (decent) employment creation in the medium term. Address inequality through the investment in people and the progressive realisation of decent jobs. Support social cohesion through interventions that directly contribute towards employment creation and a healthy, well-nourished, and safe labour force. Highlight the need for effective monitoring, reviewing, and evaluating of the various interventions or drivers. To act as the framework that leads to the Gauteng Growth Path, which is the living or real implementation of the GEGDS. <p>To achieve this GEGDS proposes necessary and profound structural changes to the Gauteng economy that are based on a rapid shift to an endogenous economy rooted in three key factors:</p> <ul style="list-style-type: none"> Innovation. Green Growth. Inclusivity. <p>There are three integral components that make up the strategy, namely: the seven foundational provincial priorities, the five strategic pillars, and seven cross-cutting drivers. The foundational provincial priorities of relevance include:</p> <ul style="list-style-type: none"> Creating Decent Work and Building a Sustainable and Inclusive Economy. Building Cohesive and Sustainable Communities including Spatial Development. <p>This GEGDS outlines the strategic interventions by which Gauteng will work to make this innovating, green and inclusive economy a reality. These interventions are organised into five strategic pillars. The strategic pillars of relevance include:</p> <ul style="list-style-type: none"> Transforming the provincial economy through improved efficiency. Sustainable employment creation. Sustainable communities and social cohesion. <p>Each pillar contains several government interventions, which enable them to implement this strategy. These are called drivers. Cross-cutting drivers of relevance include:</p> <ul style="list-style-type: none"> Green Economy and Sustainable Energy Usage. Innovation and the Knowledge Economy. Infrastructure – Strategic, Socio-economic and Bulk. Green Jobs. Spatial Planning.
Gauteng Provincial Spatial Development Framework (2030)	<p>The Gauteng Provincial Spatial Development Framework (GSDF) 2030 aspires to establish a compact urban form that has a balanced, polycentric spatial network, with strong and resilient nodes enabling mutually beneficial exchanges of goods and services, and movement of people as well as the protection of green spaces and sustainable energy use. To support this vision, four spatial development strategies are to be followed:</p> <ul style="list-style-type: none"> Capitalising on proximity. Managing new settlement development. Building an economic network. Creating a viable and productive hinterland. <p>The effective provision and maintenance of bulk infrastructure, including energy production, is prioritised within the capitalising on proximity strategy. Ten high-priority provincial spatial development proposals are outlined. While none focus specifically on energy production, the following are important in terms of conservation and bulk infrastructure development:</p> <ul style="list-style-type: none"> Municipal urban growth management. Strengthening and enhancing agricultural production and agro-processing. Actively pursuing environmental management and eco-system protection. Boosting and optimising provincial tourism opportunities.

Legislation	Description of Legislation and applicability
	<ul style="list-style-type: none"> The GSDF notes that the West Rand District Municipality (WRDM) is currently operating at near capacity in terms of energy production and the lack of stable generation capacity from current providers act as a major constraint to economic development and investor confidence. The GSDF also notes that Merafong's electricity network was not designed to supply the developments and extensions that are currently underway in the district.
Gauteng Integrated Energy Strategy (2012)	<p>The aim of the Gauteng Integrated Energy Strategy (GIES) is to direct the energy supply and consumption of the Gauteng province over the next five to forty-five years by integrating and supporting sustainable energy and climate change initiatives, both locally and internationally. The key goals of this strategy include:</p> <ul style="list-style-type: none"> Providing the leadership and institutional framework required to drive the strategy. Implementing strong energy efficient measures. Facilitating the development and growth of renewable and alternative energy options. Supporting the move towards a low carbon economy. Prioritising energy security and access to safe, clean, and affordable energy. Developing and growing the alternative and energy efficiency industry as a critical aspect of Gauteng's economy. <p>The relative policy implications include:</p> <ul style="list-style-type: none"> Shifting to a low carbon economy. Maximizing the use of local energy resources. Development of the renewable energy industry as an employment creation opportunity. The GIES hopes to achieve a low carbon economy, Gauteng as a hub of innovation, focused on clean energy technology, decentralised energy generation-micro generation, as well as clean and renewable energy contributing 50% of the total energy mix of the province.
Growing Gauteng Together 2030	<p>Growing Gauteng Together 2030 (GGT2030) is a plan of action realised by the Gauteng government to drive the province towards a more sustainable and inclusive future. The plan includes seven priorities that are to be executed to achieve this vision. The relevant priorities include:</p> <ul style="list-style-type: none"> The Economy, Jobs, and Infrastructure. Integrated Human Settlements and Land Release. Safety, Social Cohesion and Food Security. Sustainable Development for Future Generations. This vision will be implemented along five developmental corridors of Gauteng. The Western Development Corridor includes WRDM, and the focus is around diversifying the district economy to include tourism, agriculture, and agro-processing, and renewable energy projects.
Merafong City Local Municipality Integrated Development Plan (2020)	<p>The vision for the Merafong City Local Municipality (MCLM) Integrated Development Plan (IDP) is "A prosperous, Sustainable and Community-oriented City". The Key Performance Areas (KPA) adopted by the municipality to realise this vision are:</p> <ul style="list-style-type: none"> KPA 1: Basic Service Delivery KPA 2: To Promote Local Economic Development KPA 3: To Promote Municipal Transformation & Organisational Development KPA 4: To ensure Municipal Financial Viability & Management KPA 5: To ensure Good Governance and Public Participation KPA 6: Spatial Development Framework <p>There are various Development Strategies of Merafong Municipality, which are informed by a Strategic Turn-Around plan developed during a strategic review session held in 2018. Of relevance to the project is the Electricity Supply Strategy (2020/2021), which identifies a variety of strategic interventions for the municipality. The Strategic Turnaround Plan is aligned to 14 regional outcomes, with Outcome 1: Provision of Basic Service Delivery as well as Outcome 8: Sustainable Environment being relevant to the project. The MCLMIDP notes that the status of the current Energy Plan needs to be re-assessed to integrate with the greater West Rand Plan.</p>

Legislation	Description of Legislation and applicability
Merafong City Local Municipality Spatial Development Framework (2019)	<p>Merafong Spatial Development Framework (MSDF), forms part of a hierarchy of plans that consolidate into the IDP. It concentrates on the spatial aspects of development planning and identifies the opportunities and constraints associated with the district.</p> <p>The Merafong City's SDF proposes the following structuring tools:</p> <ul style="list-style-type: none"> ■ Improve urban efficiency and rectify Apartheid spatial disparities through realigning the urban structure of Merafong settlements into three distinct urban areas. ■ Improve urban and rural liveability where basic needs are met, the cost of living is bearable, amenities and employment are accessible, and urban space is aesthetically pleasing and healthy. ■ Facilitate sustainable economic growth and diversification, through identified strategic nodes, which include a bio-energy eco-industrial park. ■ Protect natural and agricultural resources to ensure a sustainable coexistence between urban, mining, agricultural and ecological land uses. <p>Opportunities in the MSDF of relevance to the project include a Bioenergy Agro-Industrial Park and the Merafong Solar Farm Cluster Concept. Additionally, the adaptation of unsustainable, unused, or old mines and mine dumps for reuse or rehabilitation also presents an opportunity. The mines Driefontein North and Kusasalethu/Elandsrand were identified as particularly promising for the establishment of solar farms or other renewable energy sources.</p>

4.2 SCOPE OF REGISTRATION

Table 4-2 outlines the listed activities applicable to the proposed project from which the Proponent wishes to be excluded.

Table 4-2 - Listed activities applicable for exclusion

Listed Activity	Description
GNR 983 (as amended) (Listing Notice 1)	
<p>Activity 11 (i):</p> <p>The development of facilities or infrastructure for the transmission and distribution of electricity—</p> <p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</p> <p>(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more;</p> <p>excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —</p> <p>(a) temporarily required to allow for maintenance of existing infrastructure;</p> <p>(b) 2 kilometres or shorter in length;</p> <p>(c) within an existing transmission line servitude; and</p> <p>(d) will be removed within 18 months of the commencement of development.</p>	<p>The proposed Merafong SEF will include an up to 132kV switching station..</p>
<p>Activity 12 (ii)</p> <p>The development of—</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>(a) within a watercourse;</p>	<p>Internal access roads will be required for access to the Facility. The physical footprint of internal access roads and electrical cabling required to connect the various components of the Facilities will either traverse the delineated watercourses on site or be located within</p>

Listed Activity	Description
	32m of the outer extent of the delineated watercourses on site. The access roads will fall within the Merafong SEF development areas.
Activity 19 The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	The proposed infrastructure, with specific reference to access roads and the grid infrastructure, will require the removal of soil more than 10 cubic metres from a watercourse.
Activity 24 (ii) The development of a road— (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	The proposed access roads for the Solar facility will be 8 metres wide. Where existing roads are utilised these will be updated 8 metres wide.
GNR 984 (as amended) (Listing Notice 2)	
Activity 1 The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs: (a) within an urban area; or (b) on existing infrastructure	The proposed energy generation technology (i.e. Solar) will generate more than 20MW of electricity output from a renewable resource outside an urban area.
Activity 15 The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Based on the information provided with regards to total project area, it is assumed that the facilities will result in the clearance of at least 20 hectares or more of indigenous vegetation.
GNR 985 (as amended) (Listing Notice 3)	
Activity 4 The development of a road wider than 4 metres with a reserve less than 13,5 metres. C. Gauteng (iv). Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans.	Internal roads with a width of up to approximately 8m will provide access to the site as well as the substation. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. The project area contains areas classified as Critical Biodiversity Areas (CBA) as identified in the Gauteng Conservation Plan (C-Plan) (4.0).
Activity 10 The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. C. Gauteng	The Facility will require storage and handling of dangerous goods, including fuel, cement, and chemical storage onsite, that will be greater than 30m ³ but not exceeding 80m ³ within the specified geological areas. Storage contemplated above may be located within, and will require vegetation

Listed Activity	Description
(iv). Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans.	clearance in sensitive areas. The storage areas may also be located within delineated watercourses on site, or within 100m of the outer extent of the delineated watercourses on site. The project area contains areas classified as CBA as identified in the Gauteng Conservation Plan (C-Plan) (4.0).
Activity 12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. C. Gauteng (ii) Within critical biodiversity areas identified in bioregional plans	The clearance of indigenous vegetation will be required for the facilities, however, the full extent is not yet known. Such clearance will be in excess of 300m ² The project area contains areas classified as CBA as identified in the Gauteng Conservation Plan (C-Plan) (4.0).
Activity 14 (ii)(a)(c) The development of— (ii) infrastructure or structures with a Physical footprint of 10 Square metres or more; where such development occurs— (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; b. Gauteng (iv) Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;	The Facility will require the development of internal roads and/or access roads around the site. The physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various components of the Facility will either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site. The project area contains areas classified as CBA as identified in the
Activity 18 The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. c. Gauteng v. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;	Transport of large infrastructure components related to the facilities will require the widening of existing access and/or internal roads by more than 4 metres or the lengthening of existing access and/or internal roads by more than 1km. The project area contains areas classified as CBA as identified in the Gauteng Conservation Plan (C-Plan) (4.0).

5 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS

5.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

Formal responsibilities are necessary to ensure that key management measures/procedures are executed. Merafong Energy (Pty) Ltd (the Project Company) (via the appointed Engineering, Procurement, and Construction (EPC) contractor/contractor/principal contractor), will be responsible for the overall control of the project site during the pre-construction, construction, operation, decommissioning and rehabilitation phases of the project. The Project Company's responsibilities (via the appointed EPC contractor/contractor/principal contractor) will include the following:

- Appointing an independent environmental control officer (ECO) for the duration of the construction phase and as specified by the DFFE;
- Being fully familiar with the SSVR, Registration conditions and the EMPr;
- The overall implementation of the EMPr;
- Ensuring compliance, by all parties, and the imposition of penalties for noncompliance;
- Implementing corrective and preventive actions, where required;
- Ensuring that any other necessary permits or licences are obtained and complied with;
- Preventing pollution and actions that will harm or may cause harm to the environment;
- Notifying the DFFE within 30 days that construction activity will commence;
- Notifying the DFFE in writing within 24 hours if any condition in the Registration cannot be or is not adhered to; and
- Notifying the DFFE 14 days prior to commencement of the operational phase.

Table 5-1 provides a high-level outline of the various roles and responsibilities of the project

Table 5-1 – Roles and Responsibilities

Designation	Roles and Responsibilities
DFFE	<ul style="list-style-type: none"> ■ Is the designated authority responsible for authorising this EMPr and has overall responsibility for ensuring that the Project Company complies with this EMPr, and any conditions listed in the Registration. ■ Shall also be responsible for approving any significant amendments that may be required to the EMPr. ■ May further perform random site inspections to check compliance with the EMPr.
Project Manager/Engineer/Site Engineer	<ul style="list-style-type: none"> ■ Ensure that the Project Company and the relevant contractor/s are aware of all specifications, and legal constraints pertaining to the project during construction, specifically with regards to the environment. ■ Ensure that all stipulations within the EMPr and conditions of the Registration are communicated and adhered to by the Project Company and its contractor(s). ■ Monitor the implementation of the EMPr and conditions of the Registration throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes. ■ Be fully conversant with the conditions of the Registration and all relevant environmental legislation.
Site Manager (EPC Contractor)	<ul style="list-style-type: none"> ■ Be fully conversant with the conditions of the Registration and the EMPr. ■ Approve method statements. ■ Provide support to the ECO.

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> ■ Be fully conversant with all relevant environmental legislation and ensure compliance thereof. ■ Have overall responsibility for the implementation of the EMPr and conditions of the environmental authorisation. ■ Ensure that audits are conducted to ensure compliance to the EMPr and conditions of the environmental authorisation. ■ Liaise with the Project Manager or his delegate, the ECO and others on matters concerning the environment. ■ Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution and unnecessary degradation onsite. ■ Confine construction activities to demarcated areas.
<p>Environmental Officer (EO) (EPC Contractor)</p>	<p>The EO must be appointed by the Contractor and is responsible for managing the day-to-day onsite implementation of the EMPr, and for the compilation of weekly environmental monitoring reports during construction. During the operational phase environmental monitoring reports as specified by the DFFE (such as annually) by the external EO. In addition, the EO must act as liaison and advisor on all environmental and related issues, seek advice from the ECO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable manner and timely manner. The EO shall be a full time dedicated member of the Contractor's team and must be approved by the Project Company.</p> <p>The following qualifications, qualities and experience are recommended for the individual appointed as the EO:</p> <ul style="list-style-type: none"> ■ A relevant environmental diploma or degree in natural sciences, as well as a minimum of three years' experience in construction site monitoring, excluding health and safety; ■ A level-headed and firm person with above-average communication and negotiating skills. The ability to handle and address conflict management situations will be an advantage; and ■ Relevant experience in environmental site management and EMPr compliance monitoring. <p>The EO's responsibilities include, but not limited to:</p> <ul style="list-style-type: none"> ■ Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the registration, environmental legislation and EMPr; ■ Keeping a register of compliance / non-compliance with the environmental specifications; ■ Identifying and assessing previously unforeseen, actual or potential impacts on the environment; ■ Ensuring that a brief weekly environmental monitoring report is submitted to the ECO; ■ Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ECO and Contractor; ■ Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land; ■ Attending site meetings (scheduled and ad hoc); ■ Presenting the environmental awareness training course to all staff, Contractors and Sub contractors, and monitoring the environmental awareness training for all new personnel on-site, as undertaken by the Contractor; ■ Ensuring that a copy of the Registration and the latest version of the EMPr are available on site at all times, and maintaining a records-keeping system of all compliance and environmental documentation; ■ Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the DFFE; ■ Assisting the Contractor in drafting environmental method statements and/or the Environmental Policy where such knowledge/expertise is lacking; ■ Undertaking daily environmental monitoring to ensure the Contractor's activities do not impact upon the receiving environment. Such monitoring shall include dust, noise and water monitoring; and

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> ■ Maintaining the following on site: <ul style="list-style-type: none"> • A weekly site diary. • A non-conformance register (NCR). • An I&AP communications register, and • A register of audits. • Records of all communication received in relation to compliance actions. <p>The EO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to the Operator.</p>
Independent ECO	<p>A suitably qualified ECO must be appointed by the Project Company to monitor the project compliance with the EMPr and conditions of the Registration on a monthly basis during construction. During the operational phase environmental monitoring may be undertaken as specified by the DFFE (such as annually) by this external ECO. Proof of external ECO appointment must be maintained onsite.</p> <p>Responsibilities of the ECO include:</p> <ul style="list-style-type: none"> ■ Be fully conversant with the conditions of Registration and the EMPr; ■ Be fully conversant with all relevant environmental legislation and ensure compliance thereof; ■ Approve method statements; ■ Remain employed until the completion of the construction activities; and ■ Report to the Project Manager, including all findings identified onsite. <p>In addition, the ECO will:</p> <ul style="list-style-type: none"> ■ Undertake independent monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation; ■ Take appropriate action if the specifications contained in the EMPr and conditions of the Registration are not followed; ■ Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and ■ Ensure that activities onsite comply with all relevant environmental legislation.
Contractors, Staff and Service Providers	<ul style="list-style-type: none"> ■ Prepare Method Statements as per the EMPr, and ensure all activities are conducted as per the approved Method Statements. ■ Regular on-site auditing to assess performance against the requirements of this EMPr. ■ Completion of the appropriate training requirements as specified in the training program. ■ Implementation and maintenance of environmental management controls as set out in the project's environmental management documentation.

5.2 ENVIRONMENTAL AWARENESS PLAN

Legislation requires that Merafong Energy (Pty) Ltd (via the appointed EPC contractor / contractor / principal contractor) must develop an environmental awareness plan that describes the manner in which Merafong intends to inform employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

It is important to ensure that all relevant personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental degradation and harm.

To achieve effective environmental management, it is important that employees, contractors (including subcontractors) are aware of the responsibilities in terms of the relevant environmental legislation and the contents of the EMPr, conditions of the environmental authorisation.

Merafong will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. Merafong will require that all managers associated with the project adhere to the mitigation/management measures detailed in the EMPr and identify, evaluate, and minimise risks to the social, physical and biophysical environments. This will be implemented by educating employees in social and environmental matters and responsibilities relating to performance of their assigned tasks. Furthermore, employees will be entrusted to maintain the necessary level of environmental performance for their activities. Contractors, and their associated sub-contractors, will also need to demonstrate compliance to mitigation/ management measures included in the EMPr.

The following methodology described must be used to implement and ensure environmental and social awareness and competence:

5.2.1 INTERNAL COMMUNICATION

Internal Communication of environmental issues to ensure environmental awareness will be achieved by using any combination of the following means:

- Meetings;
- Memos;
- Notice boards;
- Briefs;
- Reports;
- Monthly themes;
- Daily operational bulletins;
- Newsletter;
- E-mail;
- Telephone; and
- Induction training.

5.2.2 STANDARD MEETINGS

The following standard meetings will be held at specific times to ensure that environmental and social awareness; potential problems; complaints etc. are heard and addressed proactively:

- Safety, Health and Environmental Meetings will be held monthly by the Senior Management;
- Safety, Health and Environmental Meetings will be held weekly (during construction) and monthly (during operation) by the relevant personnel, environmental and social issues will form part of the agenda;
- Communication between all personnel and Senior Management will be facilitated through the appropriate reporting lines, or by using complaint and incident forms.

5.2.3 ENVIRONMENTAL AND SOCIAL TALK TOPICS

Monthly environmental and social talk topics must be compiled and distributed/shared to relevant personnel and must be displayed on appropriate notice boards or shared by whatever means established on site. As a minimum, the following topics must be considered during the course of the construction phase:

- Water Quality;
- Water Use and Consumption;
- Air Quality i.e. dust;
- Power Consumption and Energy Efficiency;
- Waste Management;
- Fauna and Flora;
- Emergency Procedures;
- Incidents Reporting;
- Systems;
- Noise;
- Heritage Impacts;
- Landowner Etiquette;
- Speed Limits;
- Health Risks (such as HIV/ Aids); and
- General Awareness (e.g. World Environment Day, National Arbour Day).

5.2.4 GENERAL COMMUNICATIONS

Communication to the community, government, landowners, neighbouring farmers, environmental groups, non-government organisations and other stakeholders will be communicated to ensure environmental and social awareness by means of the following:

- Fax or E-mail;
- Telephone; or
- Formal meetings.

5.2.5 TRAINING

It is important to ensure that all personnel, contractors and their sub-contractors have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm. As a minimum environmental training must include the following:

- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment.
- Employees will be thoroughly familiar with the requirements of the EMP and the environmental specifications as they apply to the project.
- Employees must undergo training for the operation and maintenance activities associated with project and have a basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated.
- Awareness of any other environmental matters, which are deemed to be necessary by the Environmental Officer.
- Training must include the environment, health and safety as well as basic HIV/AIDS education.

The following facets to training form part of this Environmental and Social Awareness Plan:

- **Induction:** Environmental and social awareness training will be given at induction when personnel join the company and/or return from leave. Induction training will also be given to visitors entering the site. Induction training will include, inter alia:
 - A discussion on the environment concept, what does it comprise of and how do we interact with it;
 - A description on the components and phases of the specific renewable power generation facility;
 - A general account of how the facility and its associated activities can affect the environment, giving rise to what are called environmental impacts;
 - A discussion on what staff can do in order to help prevent the negative environmental impacts from degrading the environment i.e. environmental impact management.
- **Job Specific Training:** Job specific training programmes will be developed as and when required. The programs will be based on the significant environmental and social aspects/ impacts that are identified during regular audits and site inspections. Supervisory staff will be equipped with the necessary knowledge and information to guide their employees on environmental and social aspects applicable to performing a specific task.
- **Competency Training:** The Environmental Officer will be responsible for the environmental and social competency and awareness training of Middle Management and supervisors. This training will be performed both on a one-on-one basis and through workshops and presentations. Competence and the effectiveness of training and development initiatives will be determined through the following methods:
 - Trend analysis of incidents reported; and
 - Analysis of work areas during visits and audits.

The process to declare competency of personnel is documented in the ISO9001:2000 procedure. This plan will be amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.

- **Training Records:** Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Persons having received training must indicate in writing that they have indeed attended a training session and have been notified in detail of the contents and requirements of the EMP. The attendance registers must be kept on file.

5.3 MONITORING

The EPC contractor EO will monitor the day-to-day site activities on an ongoing basis and will produce weekly monitoring reports during construction. The independent, external ECO will undertake monthly audits to ensure compliance with the EMP and conditions of the Registration during the construction activities and will report to the Site Manager should any non-compliance be identified, or corrective action deemed necessary.

During the operational phase, Merafong (via the appointed EPC contractor/contractor/principal contractor) will establish, implement and maintain a procedure to monitor and measure, on a regular basis, the key characteristics of the operations that may have a significant environmental impact. The procedure shall include the documenting of information to monitor performance, applicable operational controls and conformity with the operation's environmental objectives and targets.

Merafong will ensure that all instruments and devices used for the measurement or monitoring are calibrated and appropriately operated and maintained. Calibration records must be kept on site or in close proximity to the equipment for ease of availability.

All the conditions outlined in the EMPr (**Section 6**) will be subject to required internal day-to-day monitoring and external compliance monitoring. Where required, any specific additional monitoring has been outlined in the EMPr (**Section 6**).

5.4 NON-CONFORMANCE AND CORRECTIVE ACTION

The auditing of the construction and operational activities may identify non-conformances to the EMPr and conditions of the Registration. Non-conformances may also be identified through incidents, emergencies or complaints recorded. In order to correct non-conformances, the source must be determined, and corrective actions must be identified and implemented.

5.4.1 COMPLIANCE WITH THE EMPR AND CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION

- A copy of the EMPr and conditions of the Registration will be available onsite at all times for the duration of the construction and operational activities;
- All persons employed by a contractor or their sub-contractors will abide by the requirements of the EMPr and conditions of the environmental authorisation;
- Any members of the workforce found to be in breach of any of the specifications contained within the EMPr and conditions of the Registration may be ordered by the Site Manager to leave the site. A contractor will not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMPr and conditions of the environmental authorisation;
- Should a contractor be in breach of any of the specifications contained in the EMPr and conditions of the environmental authorisation, the Site Manager will, in writing, instruct the contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work will be suspended should non-compliance continue;
- Should non-compliance continue, further written notification will be forwarded to the contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties and/or work will be suspended as specified previously; and
- Departmental officials will be given access to the property referred to in the EMPr for the purpose of assessing and/or monitoring compliance with the EMPr and conditions of the environmental authorisation, at all reasonable times.

5.4.2 DUTY OF CARE

Under Section 28 of the NEMA, all personnel involved with the construction and operational activities onsite will be responsible for implementing measures to prevent pollution or degradation of the environment from occurring, continuing or recurring. Failure to comply with the above conditions is a breach of the duty of care. If such harm is unavoidable, steps must be taken to minimise and rectify such pollution or degradation of the environment.

5.5 DOCUMENTATION AND REPORTING

The holder of the registration is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

The following documentation must be kept onsite in order to record compliance with the EMPr and conditions of the environmental authorisation:

- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident and emergency log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record; and
- Record of complaints.

The contractor will be required to report on the following:

- Environmental incidents involving contractor/ employees and/or the public;
- Environmental complaints and correspondence received from the public; and
- Incidents that cause harm or may cause harm to the environment.

The above records will form an integral part of the ECO's reports and records thereof maintained for the duration of the project. These records will be kept with the EMPr and conditions of the Registration, and will be made available for scrutiny if so requested by the Site Manager or his delegate and the ECO.

The contractor will ensure that the following information is recorded for all environmental complaints/incidents/emergencies:

- Date of complaint/incident/emergency;
- Location of complaint/incident/emergency;
- Nature of complaint/incident/emergency;
- Causes of complaint/incident/emergency;
- Party/parties responsible for causing complaint/incident/emergency;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident/emergency;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident/emergency;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions;
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and

- Copies of all correspondence received regarding complaints/incidents/emergency.

5.6 PUBLIC COMPLAINTS

The Contractor shall keep a Complaints Register on site to allow the general public to document any comments on or complaints regarding the activities of the site.

The Complaints Register must:

- Have numbered pages – any missing pages must be accounted for by the Contractor;
- Be tabled during monthly site meetings;
- Be made available to the SE/Contract Manager, the ECO, the Project Company, and/or any authority at any time if requested; and
- Include a section for the documentation of the action taken to address the complaint.

All complaints must be investigated, responded to, and recorded in the Complaints Register within 28 calendar days.

6 SITE SPECIFIC ENVIRONMENTAL CONTROLS

The EMPr contains guidelines, operating procedures, rehabilitation and pollution control requirements which will be binding to the onsite personnel working for, or on behalf of Merafong. It is essential that the EMPr be carefully studied, understood, implemented and adhered to at all times.

In instances where the method statements provided by the contractor conflicts with the EMPr, such conflicts will be discussed between the Site Manager, ECO and contractor and if unresolved the EMPr will take precedent.

The EMPr identifies various actions which are undertaken throughout the construction and operational phases of the Merafong SEF (inclusive of the powerline and substation). Not every action will be required during the entire course of activities. Therefore, the actions identified in the EMPr have been given priority timeframes for proposed implementation. The columns in the structure of the EMPr have been described in **Table 6-1** below.

Table 6-1 – Structure of EMPr

Column	Description
Activity/Aspect	Highlights the various activities/aspects associated with the project i.e. the contractors' activities that will interact with the environment.
Impact Management Outcome	The desired outcomes from effectively minimising negative impacts and/or enhancing positive impacts.
Impact Management Actions/Measures	Indicates the actions required to prevent and /or minimise the potential impacts on the environment that are associated with the project.
Indicator and Compliance Management	Items that will assist with determining compliance against management actions.
Responsibility	Indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr. Please note that the Site Manager will have authority to stop works if/as necessary.
Priority Timeframe	Indicates when the actions for the specific aspect must be implemented and/or monitored.

Table 6-2 – Contractor laydown area and site access: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
CONTRACTOR LAYDOWN AREA AND SITE ACCESS			
Impact Management Outcome: <ul style="list-style-type: none"> To implement measures to minimise impacts on the environment from the initiation of construction activities through planning, careful site access route selection and implementation of mitigation measures. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Close-out on incidents. Monitoring and audit reports. Inductions training and register. Environmental awareness programme/toolbox talks. 			
Project Initiation of Construction Activities	Appoint an ECO to manage and verify compliance with the Registration and EMPr.	<ul style="list-style-type: none"> Project Manager EO Contractor (Site Manager) 	<ul style="list-style-type: none"> Construction Decommissioning
	The development footprint must be demarcated to ensure that only the demarcated areas are impacted upon. The no-go areas identified must be demarcated before the construction or decommissioning commences. This includes all wetlands and the associated buffers, and any high sensitivity areas as indicated in Figure 3-1 . Label these areas as environmentally sensitive areas, keep out.		
	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area and wetlands to inform importance of these areas and their conservation. A signed register of attendance must be kept for proof.		<ul style="list-style-type: none"> Construction Operation
	Site clearing must be limited to the footprint of the infrastructure requirements.		<ul style="list-style-type: none"> Construction
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	Firefighting equipment must be securely placed and inspected monthly.		

Table 6-3 – Vehicle, Equipment and Machinery Management: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.2 VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Close-out on incidents. Monitoring and audit reports. Transport route delineation. Daily equipment, machinery and vehicle checklists. Incident classification and reporting procedure. 			
Operation of Equipment, Machinery and Vehicles	Ensure that the equipment, machinery and vehicles are adequately maintained so as to: <ul style="list-style-type: none"> Reduce the potential for spillages of oil, diesel, fuel or hydraulic fluid. Ensure road-worthiness. Reduce emissions. Evidence of such maintenance must be recorded and maintained onsite for verification.	<ul style="list-style-type: none"> EO Contractor Operator 	<ul style="list-style-type: none"> Construction Operation Decommissioning
	The movement of vehicles into and out of the site must be managed to ensure the impact on public areas is minimised, such as ensuring that abnormal loads are moved outside of peak traffic hours, and reasonable measures are taken to ensure that public and staff safety is managed adequately		
	All vehicles must be regularly inspected for leaks;		
	Re-fuelling must take place on a sealed surface area away from the watercourses to prevent ingress of hydrocarbons into topsoil;		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	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		

Table 6-4 – Fuel and Chemical Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.3 FUEL AND CHEMICAL MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure the correct storage, handling and disposal of fuels and chemicals in order to prevent impacts to the surrounding environment. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Maintenance records. Safe disposal certificates (if applicable) Material safety data sheets (MSDS). Emergency preparedness and response procedure. Incident classification and reporting management procedure (to be developed). Health, safety, environmental and community incident and complaints management system register. Chemicals management procedure (to be developed). Monitoring and audit reports. Training records. 			
Fuel and Chemical Management	Provide secure storage for fuel, oil, chemicals and other hazardous materials. Securely fence and lock the storage areas to accommodate all hazardous substances such as fuel, oils and chemicals. The storage area must be roofed and the floor must be an impermeable surface and suitably bunded as per the requirements outlined in SANS 10089-1 (2008). If storage capacity triggers licencing, those must be acquired.	<ul style="list-style-type: none"> EO Contractor Operator 	<ul style="list-style-type: none"> Construction Operation
	Label all liquids (chemicals and hydrocarbons) stored onsite for easy identification. MSDS for onsite chemicals, hydrocarbon materials and hazardous substances must be readily available. MSDS must include mitigation measures to ameliorate potential environmental impacts which may result from a spill, incorporating health and safety mitigation measures.		
	A spill management plan must be in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers for safe disposal.		
	In cases where a surface leak occurs during loading and off-loading activities, the spill material will be cleaned using a spill kit.		
	Storage of potentially hazardous materials (including but not limited to fuel, oil, cement, etc.) must be above any 100-year flood line or outside the designated watercourse buffer, whichever is greater;		
	A walled concrete platform, dedicated store with adequate flooring or beamed area must be used to accommodate chemicals such as fuel, oil, paint, herbicide and insecticides, as appropriate, in well-ventilated areas;		
	All spills should be immediately cleaned up and treated accordingly; and		
	Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be removed to an appropriate waste facility.		
	No mixing of construction materials such as cement should be permitted within or adjacent to watercourses and no such mixing may occur on bare soils in the surrounding areas;		
	Leaking equipment and vehicles must be repaired immediately or be removed from the project area to facilitate repair		
Health and Safety	Display “no smoking” and “no naked flame” signs in and around the project area, as well as near the hazardous material store.	<ul style="list-style-type: none"> ■ EO ■ Contractor 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	Strategically place the correct types of fire extinguishers onsite and near the hazardous material store. Train key personnel on basic firefighting skills		
	Frequently inspect and maintain containment facilities and retain records onsite.		

Table 6-5 – Waste Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.4 WASTE MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Waste Management Plan (WMP). Relevant SANS Codes of Practice. Waste manifests and safety disposal certificates (all waste streams). Emergency preparedness and response procedure. Incident classification and reporting management procedure (to be developed). Health, safety, environmental and community incident and complaints management system register. Monitoring and audit reports. 			
General Waste Management	General waste generated as a result of construction and operational activities must be managed in accordance with a WMP (to be developed).	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Operation Decommissioning
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the WMP.		
	Prohibit littering, burning and burying of waste onsite.		
	Place an adequate number of labelled or colour coded general waste bins around the laydown area and at the construction sites during construction activities in order to minimise littering. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		
	Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Refuse bins shall be emptied daily (or as required) and secured.		
	Temporary storage of domestic waste shall be in covered waste skips.		
	Maximum domestic waste storage period shall be 10 days.		
	Retain records such as waybills and waste manifests associated with waste removal, transportation and disposal (safe disposal certificates).		
	Prohibit the mixing of general waste with hazardous waste. Should general waste be mixed with hazardous waste, it will be considered hazardous waste.		
	There should be waste segregation (e.g. electronic equipment, chemicals, oil contaminated rags, paper, plastic) and management on the site.		
	Recover, recycle and reuse waste of general waste as far as possible.		
Hazardous Waste Management	Hazardous waste generated as a result of construction, operational and decommissioning activities must be managed in accordance with the WMP.	<ul style="list-style-type: none"> ■ ECO ■ EO ■ Contractor 	<ul style="list-style-type: none"> ■ Construction ■ Operation ■ Decommissioning
	The WMP must include a procedure for handling spillages.		
	Strict use and management of all hazardous materials used on site.		
	Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / bunded areas		
	Train and inform all onsite personnel regarding hazardous waste minimisation, management and disposal as per the WMP.		
	A designated and appropriately demarcated and covered hazardous waste storage area must be established on a hard standing area.		
	Ensure that all hazardous wastes temporarily stored on site are stored in a covered skip and are placed on a hard standing area.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Clean areas where hazardous waste spills have occurred and dispose of the hazardous material appropriately. Key personnel must be trained on handling spillages.		
	Retain records of appropriate safety disposal certificates associated with hazardous waste removal, transportation and disposal.		
	An emergency preparedness and response plan is to be developed by the contractor/operator for any hazardous waste being removed, transported and disposed of offsite.		
	Ensure that waste manifest documentation (as per the Waste Classification and Management Regulations – GNR 634) is prepared and maintained for the generation, transportation and disposal of waste.		
	All major spills should be reported to the authorities as per the emergency preparedness and response frequencies / specifications.		

Table 6-6 – Health and Safety: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.5 HEALTH AND SAFETY			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure communication with members of the public to promote safety awareness. ■ To prevent public access to construction sites and storage areas. ■ To ensure safety for all onsite personnel. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Induction training and records. ■ Health, safety, environmental and community incident and complaints management system register. ■ Monitoring and audit reports. ■ Incident classification and reporting management procedure (to be developed). ■ PPE Register. ■ Occupational health and safety plan (to be developed). ■ Health and safety protocol (to be developed). 			
Health and Safety	The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations.	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ EO 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of the conditions contained herein.		
	Development and implementation of an occupational health and safety plan and Safety Health Environment Risk & Quality (SHERQ) policy	<ul style="list-style-type: none"> ■ Contractor/Operator ■ Site Manager 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	The appointed contractor will be responsible for the development of a comprehensive health and safety protocol which must be adhered to.	<ul style="list-style-type: none"> ■ Contractor 	<ul style="list-style-type: none"> ■ Construction
	Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, and first responder contact numbers.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Provide and wear appropriate PPE onsite.	<ul style="list-style-type: none"> Contractor/Operator Site Manager 	<ul style="list-style-type: none"> Construction Operation
	All normal procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction begins	<ul style="list-style-type: none"> Contractor/Operator Site Manager 	<ul style="list-style-type: none"> Construction Operation
	All necessary good hygiene practices to be in place, e.g. provision of toilets, eating areas, infectious disease controls.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others.		
	Prior to construction, determine the dangerous species in the area and what responses are needed to bites/exposure/attacks.		
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Outside work must be stopped during thunderstorms. Lightning conductors may be required for the final installation, to be confirmed during design phase.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
Facility emergencies	<p>Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as:</p> <ul style="list-style-type: none"> appointment of emergency controller, emergency isolation systems for electricity, emergency isolation and containment systems for electrolyte, provision of PPE for hazardous materials response, provision of emergency facilities for staff at the main office building, provision of first aid facilities, first responder contact numbers etc 	<ul style="list-style-type: none"> Operator 	<ul style="list-style-type: none"> Operation
	A detailed risk assessment of all normal operating and maintenance activities on site to be compiled, and form the basis of operating instructions, prior to commencing commissioning.	<ul style="list-style-type: none"> Operator 	<ul style="list-style-type: none"> Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	MSDSs must be made available for all chemicals and substances on site	<ul style="list-style-type: none"> Site Manager Contractor Operator EO 	<ul style="list-style-type: none"> Construction Operation
Fire risk	Full Process Safety Management system with all elements to be implemented to highest international best practice levels.	<ul style="list-style-type: none"> Site Manager Contractor Operator EO 	<ul style="list-style-type: none"> Construction Operation
	Suitable fire-fighting equipment on site near source of fuel, e.g. diesel tank, generators, mess, workshops etc		
	Safety integrity level rating of equipment (failure probably) with suitable redundancy if required.		
	Ensure regular testing of emergency alarm systems are undertaken.		
	Emergency Response plan in compliance with SANS 1514 to be compiled, e.g. plan from transport and construction phase to be extended to operational phase to include the hazards of the systems containing large quantities of highly hazardous chemicals.		
Public Safety	Restrict public access by employing full time security for the site.	<ul style="list-style-type: none"> Site Manager EO 	<ul style="list-style-type: none"> Construction Operation
Decommissioning of facility	End of Life shutdown procedure including a risk assessment of the specific activities involved.	<ul style="list-style-type: none"> Operator EO 	<ul style="list-style-type: none"> Decommissioning
	Re-purpose the equipment with associated environmental impact considered.		
	Disposal according to local regulations and other international directives.		
	Operator should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.		

Table 6-7 – Water Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.6 WATER MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To implement measures to prevent the contamination of surface and groundwater resources. ■ To prevent erosion. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Induction training and records. ■ WMP (to be developed). ■ Water Use Licence (or General Authorisation as applicable). ■ Incident classification and reporting management procedure (to be developed). ■ Environmental awareness programme/toolbox talks. ■ SWMP (to be developed). 			
Surface Water Management	Investigate feasibility of construction activities being conducted during the dry season if practical and feasible to avoid possible wetland contamination from storm water runoff (as well as soil erosion) that may be experienced during wet seasons, as much as possible.	<ul style="list-style-type: none"> ■ Site Manager ■ EO 	<ul style="list-style-type: none"> ■ Pre-Construction
	A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems		
	The stormwater control systems must be inspected on an annual basis to ensure these are functional.		
	To appropriately manage storm water, the SWMP needs to be implemented.	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ EO 	<ul style="list-style-type: none"> ■ Pre- construction ■ Construction ■ Operation
	It is recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset i.e. during the detailed design phase prior to construction, to ensure a net benefit to the environment within all areas that will remain undisturbed.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The site must be prepared/managed/contoured as according to the SWMP (to be developed) to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Containment of all contaminated water by means of careful run-off management on site.		
	Ensure that site offices, ablutions, contractor laydown areas, construction materials and stockpiles, where relevant, are placed outside and above the 1:100 year flood line;		
	Limit the footprint area of the construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils;		
	As far as possible, site clearing activities should take place at the end of the wet season to minimise the risk of erosion, incision and sedimentation of the associated watercourses, and as far as possible, all remaining construction activities should take place during the dry winter months to minimise impacts as a result of high flows and runoff from exposed soils and materials;		
	Ensure a soil management programme is implemented and maintained to minimise the potential for erosion and sedimentation;		
	All/any topsoil or building material stockpiles must be protected from erosion, stored on flat areas where runoff will be minimised, and be surrounded by bunds. Stockpiles must also only be stored for the minimum amount of time necessary;		
	Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction must take place;		
	All erosion noted within the construction footprint should be remedied immediately and included as part of an ongoing rehabilitation plan;		
	Implement and maintain an alien vegetation management programme;		
	Only authorised personnel should be allowed within the construction area;		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Groundwater Management	No material may be dumped or stockpiled within or adjacent to the watercourses;	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out for the project and strictly enforced.		
	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.		
	Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage. All spillage incidents must be reported to the responsible site officer as soon as they occur.		
	Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent groundwater contamination.		
Potable Water Management	Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment	<ul style="list-style-type: none"> Contractor/Operator EO 	<ul style="list-style-type: none"> Construction Operation
	Onsite staff are to be provided with an appropriate potable water supply, safe and healthy sanitary facilities		
	Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated watercourses and wetlands.		
	Onsite staff must be made aware and encouraged to use water sparingly such that there is no water wastage.		
	Ensure water conservation is being practiced by: <ul style="list-style-type: none"> Minimising water use during cleaning of equipment; Undertaking regular audits of water systems; and Including a discussion on water usage and conservation during environmental awareness training. The use of grey water is encouraged. 		

Table 6-8 – Air quality: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.7 AIR QUALITY			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure that impacts to air quality of the surrounding environment are minimised. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Complaints register. ■ Incident reporting system. ■ Health, safety, environmental and community incident and complaints management system register. ■ Incident classification and reporting management procedure (to be developed). ■ Equipment, machinery and vehicle maintenance. 			
Dust Management	Before the commencement of any site works and during the operation, as much vegetation as possible must be retained, including patches and strips to minimise dust.	<ul style="list-style-type: none"> ■ EO ■ Contractor 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	Activities with high dust-causing potential, such as grading and moving of soil, must not be carried out in sensitive areas during adverse wind conditions.		<ul style="list-style-type: none"> ■ Construction
	All stockpiles (if any) must be restricted to designated areas and may not exceed a height of two (2) metres;		
	Earth-moving works have the potential to generate large amounts of dust. Pre-planning of earth-moving works can reduce dust emissions by limiting the time the site is exposed. Options for dust control can include the following: <ul style="list-style-type: none"> ■ Plan earth-moving works so that they are completed just prior to the time they are needed ■ Observe weather conditions and do not commence or continue earth moving works if conditions are unsuitable e.g., under conditions of strong winds ■ Reduce off-site hauling via balanced cut and fill operations ■ Dust suppression in areas to be disturbed 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas		
	Cover and/or maintain appropriate freeboard on trucks hauling any loose material that could produce dust when travelling. Minimise transfer points.		
	Re-vegetate disturbed areas as soon as possible to prevent excessive dust from occurring.		
	Once construction is complete, initiate rehabilitation (e.g. re-vegetation) procedures to reduce wind speed across exposed surfaces.		
	Dampen exposed soil to suppress dust if required. Use watering sprays on materials to be loaded and during loading.		
	Where possible, minimise speed limits, vehicle weights and the number of vehicles using unpaved roads.		

Table 6-9 – Noise: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.8 NOISE			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that noise impacts to the surrounding environment are minimal or mitigated. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Complaints register. Incident reporting system. Health, safety, environmental and community incident and complaints management system register. Incident classification and reporting management procedure (to be developed). Equipment, machinery and vehicle maintenance. 			
Noise	Fit equipment, machinery and vehicles generating excessive noise with appropriate noise abatement measures and undergo regular maintenance to ensure optimum efficiency during operation	<ul style="list-style-type: none"> EO Contractor/Operator 	<ul style="list-style-type: none"> Construction Operation
	Provide a complaints register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure. Contact details of a responsible person on site should complaints arise.		
	Avoid noisy activities at night-time and outside of normal weekend working hours where possible.		
	Due to the nature of site, construction is unlikely to continue after sunset, however if required to work afterhours, notices should be put up informing the neighbouring/relevant landowners/land occupiers accordingly.		
	Employees / contractors are to be provided with appropriate hearing protection when undertaking noisy activities.	<ul style="list-style-type: none"> EO Contractor/Operator 	<ul style="list-style-type: none"> Construction Operation

Table 6-10 – Soil, Land Use and Agriculture: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.9 SOIL, LAND USE AND AGRICULTURE			
Impact Management Outcome: <ul style="list-style-type: none"> To prevent any disturbance, erosion or contamination of soil resources. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. WMP (to be developed). Incident classification and reporting management procedure (to be developed). Health, safety, environmental and community incident and complaints management system register. Monitoring and audit reports. Stormwater Management Plan (SWMP) (to be developed). 			
Loss of soil	Strip and stockpile all useable soil material.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction
	Topsoil stockpiles should be kept low (below 2m tall).		
	Irrespective of where soil is stockpiled, it should be vegetated as soon as possible to protect against erosion, discourage weeds and maintain active soil microbes.		
	The topsoils should be stripped to a depth of 30 cm and subsoils to a depth of 80cm. All stripping and stockpiling should be undertaken according to the guidelines below.		
	Demarcate the area to be stripped clearly, so that the contractor does not strip beyond the demarcated boundary. Topsoil should only be stripped in areas that are excavated.		
	The area to be stripped requires storm water management and the in-flow of water should be prevented with suitable structures.		
	Prepare the haul routes prior to stripping.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Stripping should not be undertaken in wet conditions.		
	Construction activities should be planned in such a way that they work around farming schedules.		
	Limiting vehicle routes on site by demarcating traffic areas.		
	Limiting site vehicle access.		
	Reuse of existing roads will prevent additional areas from becoming compacted.		
	Compacted soils can be ripped to make them more suitable for cultivation.		
	Limit earthworks and vehicle movement to demarcated paths and areas.		
	Limit the duration of construction activities, especially those involving earthworks / excavations.		
	Access roads associated with the development should have gradients or surface treatment to limit erosion, and road drainage systems should be accounted for.		
	Existing roads should be used and regraded instead of creating new roads wherever possible.		
	Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces and soil stockpiles should be re-vegetated or stabilised as soon as is practically possible.		
	Any excavations done during the construction phase, in areas that will be re-vegetated during or at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it remains at the surface. Topsoil should only be stripped in areas that are excavated. Across most of the site, including construction lay down areas, it will be much more effective for rehabilitation,		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	to retain the topsoil in place. It will be advantageous to have topsoil and vegetation cover below the panels during the operational phase to control dust and erosion		
	A construction phase-specific storm water management plan should be designed for the site and adhered-to.		
	A system of storm water management, which will prevent erosion on and downstream of the site, will be an inherent part of the engineering design on site. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there		
	During periods of strong winds, stockpiles that have not yet been vegetated should be covered with appropriate material.		
	Across most of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place.		■ Pre-commissioning

Table 6-11 – Aquatic Biodiversity: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
AQUATIC BIODIVERSITY			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent the unnecessary destruction of, and fragmentation of the aquatic biodiversity of the area. No excess aquatic habitat within the area Prevent contamination of wetlands 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Monitoring and audit reports. 			
Vegetation Management	Vegetation clearing should be restricted to the proposed project footprints only, with no clearing permitted outside of these areas.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	The extent of disturbance should be limited by restricting all construction activities to the servitude as far as practically possible.		
Sensitive Areas	Locate all stockpiles, laydown areas and temporary construction infrastructure at least 50 m from the edge of delineated wetlands.		
	Ideally construction activities within wetlands should take place in winter (during the dry season). Where summer construction is unavoidable, temporary diversions of the streams might be required.		
	Areas of undisturbed, natural grassland and wetland habitat should be avoided to the extent possible.		
	A loss/disturbance buffer zone of at least 100 m should be maintained between the maximum extent of construction works and the outer boundary of wetlands and riparian zones.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Wetland/river crossings should be constructed utilizing designs that ensure that hydrological integrity of the affected wetlands is preserved, and natural flow regimes are maintained (i.e. no impoundment upstream of crossings, or flow concentration downstream of crossings.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	To prevent loss of natural habitat in wetlands beyond the direct disturbance footprint, prior to any vegetation clearing, the development footprints should be clearly marked out with flagging tape/posts in the field.		
Stormwater Management	Diffuse distribution of clean stormwater runoff around the PV foundations and road crossing to affected downslope wetland systems	<ul style="list-style-type: none"> Site Manager Contractor Developer 	<ul style="list-style-type: none"> Construction
Erosion	Install erosion prevention measures prior to the onset of construction activities. Measures should include low berms on approach and departure slopes to crossings to prevent flow concentration, sediment barriers along the lower edge of bare soil areas, placement of hay bales around the within wetland construction areas, and re-vegetation of disturbed areas as soon as possible.	<ul style="list-style-type: none"> Site Manager Contractor Developer 	<ul style="list-style-type: none"> Construction
Alien and Invasive Species Management	An alien and invasive species management plan should be developed for the Project, which includes details of strategies and procedures that must be implemented on site to control the spread of alien and invasive species. A combined approach using both chemical and mechanical control methods, with periodic follow-up treatments informed by regular monitoring, is recommended.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
Monitoring	Monitoring of wetland health to be conducted within one year of completion of construction, to measure any changes to the baseline status and ensure that recommended mitigation measures are sufficient to address any significant impacts.	<ul style="list-style-type: none"> Operator 	<ul style="list-style-type: none"> Operation
	Follow up monitoring of wetland health PES/EIS every three years throughout the operating period.		

Table 6-12 – Terrestrial Biodiversity: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.11 TERRESTRIAL BIODIVERSITY (INCLUDING PLANT SPECIES)			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent the unnecessary destruction of, and fragmentation of the biodiversity of the area. No excess habitat loss within sensitive areas. Revegetation of cleared areas. Alien vegetation clearing & control. Reduce erosion. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Monitoring and audit reports. 			
Biodiversity	Establish a buffer around sensitive landscapes (where necessary)	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Restrict all construction related disturbances to the minimum area required for safe implementation		
	Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation		
	Alien invasive vegetation to be identified and removed throughout project area and implement a alien invasive management programme.		
	Stabilising and rehabilitating any sites where construction disturbances have occurred, and ensuring that correct storm water infrastructure is in place across the proposed facility		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The boundaries of the development footprint areas are to be clearly defined (fenced) and it must be ensured that all construction and operation activities remain within defined footprint areas		
	Edge effects of all construction and operational activities, such as erosion and alien plant species proliferation, which may affect faunal habitat within surrounding areas, need to be strictly managed in all areas of increased ecological sensitivity		
	All soils compacted as a result of construction activities falling outside development footprint areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas		
	Any natural areas beyond the development footprint, which have been affected by the construction activities, must be rehabilitated using indigenous plant species. All disturbed areas are to be rehabilitated and reseeded where necessary		
	Ensure that all waste material is removed		
	Ensure that where infrastructure such as roads and other construction related activities encroach upon migratory corridors, that culverts or overpasses are installed to ensure migratory connectivity		
	No harvesting of faunal species must be allowed during any phases of the proposed development		
	<p>Development of a rehabilitation plan by a suitably qualified specialist. This plan should emphasise rehabilitation throughout all phases of the project.</p> <ul style="list-style-type: none"> ■ The plan must not only ensure structural rehabilitation but must also ensure that the functional attributes of the landscape are re-instated; ■ Once functional status has been re-instated, measures to ensure that biodiversity is re-instated. Particular mention is made here of reseeded and revegetation programs which must be undertaken in such a way as to ensure that the post closure land use objectives are supported and in any areas to be returned to open veld that the revegetation of these areas will afford the natural climax vegetation communities to become re-established. 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> Ensure that all disturbed and exposed areas are rehabilitated and covered with indigenous vegetation to prevent dust generation. Rehabilitated areas are to be continually monitored until deemed adequately rehabilitated by an appointed specialist. Development of a terrestrial monitoring plan to ensure the effectiveness of the rehabilitation plan. 		

Table 6-13 – Terrestrial Animal Species: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
ANIMAL SPECIES			
Impact Management Outcome: <ul style="list-style-type: none">Prevent the loss of the faunal community			
Indicator and Compliance Mechanism: <ul style="list-style-type: none">Induction training and records.Incident classification and reporting management procedure (to be developed).Environmental awareness programme/toolbox talks.Adhere to sensitivity map criteriaMonitoring and audit reports.			
Fauna Management	Retaining an Environmental Control Officer (ECO) on-site during construction to manage any fauna-human interactions, and train on-site construction workers/contractors on the correct and responsible treatment of wildlife;	EO	<ul style="list-style-type: none">ConstructionOperation
	Any fauna species trapped in construction areas, should be safely and correctly relocated to an adjacent area of natural habitat;		
	Enforcing on-site speed limits (recommended 20-40 km/h) for all construction and maintenance vehicles	<ul style="list-style-type: none">Site ManagerContractorEO	
	Prohibiting hunting and snaring of fauna by on-site workers		
	The rules and regulations concerning all wildlife should be communicated to workers and contractors through on-site signage and awareness training (induction);		
	An incidence register should be maintained throughout all phases of the Project detailing any wildlife mortalities/injuries caused by on-site activities. The register should be used to identify additional biodiversity management requirements;		
	Implementing noise suppression (fit mufflers and silencers to noisy equipment) and dust suppression (water spraying etc.) on-site, as required.		

Table 6-14 –Avifauna: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.13 AVIFAUNA			
Impact Management Outcome: <ul style="list-style-type: none"> To minimise impacts to avifauna and their habitat. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Monitoring and audit reports. 			
Avifauna and Habitat Management	The PV panels should preferably be constructed using a single or double axis tracking system	<ul style="list-style-type: none"> Site Manager Contractor Operator EO 	<ul style="list-style-type: none"> Construction
	Construction activity should be restricted to the immediate footprint of the Merafong Solar PV Facility and strictly managed		
	The recommendations of the aquatic and botanical studies must be strictly implemented especially as far as limitation of the construction footprint and rehabilitation of disturbed areas is concerned		
	All construction activities should be strictly managed according to generally accepted environmental best practice standards, to avoid any unnecessary impact on the receiving environment.		
	All temporary disturbed areas should be rehabilitated according to the site's rehabilitation plan, following construction.		
	Measures to control noise should be applied according to current best practice in the industry.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Construction of a single perimeter fence is recommended.		
	The 33kV powerline should be constructed below ground to eliminate the electrocution impact. If this is not feasible, the powerline must be constructed using a bird friendly structure (e.g. an inverted Delta-T structure, with the two outer phases suspended below the cross arm).		
	Electrocutions within the switching station to be mitigated reactively using site-specific recommendations, by an avifaunal specialist, if they occur.		

Table 6-15 – Archaeological and Cultural Heritage: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.14 ARCHAEOLOGICAL AND CULTURAL HERITAGE			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that sites/artefacts of heritage value are identified and protected. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Incident classification and reporting management procedure (to be developed). Monitoring and audit reports. 			
Heritage & Cultural sites	Monitoring of MF 001 by the ECO during construction.	<ul style="list-style-type: none"> Site Manager Contractor Operator EO Archaeologist 	<ul style="list-style-type: none"> Construction Operation
	Development activities must be confined to the approved development footprint only		
	If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations) is found during construction activities, the finds must be reported and the Chance Find Protocol must be implemented (Section 7.11.1).		
	If any graves are uncovered during construction activities, the archaeologist must be called in to inspect and verify the finds to be heritage graves, mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow.		
	The identified stone walled structure must be treated as a No - Go area and a 30m buffer zone should be provided from the heritage resource		

Table 6-16 – Palaeontology: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
PALAEONTOLOGY			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure that palaeontological material is identified and protected. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Health, safety, environmental and community incident and complaints management system register. ■ Incident classification and reporting management procedure (to be developed). ■ Monitoring and audit reports. 			
Chance Finds	If any palaeontological material is exposed during digging, excavating, drilling or blasting Implement the finds must be reported and the Chance Find Protocol must be implemented (Section 7.11.1).	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ EO 	<ul style="list-style-type: none"> ■ Construction

Table 6-17 – Traffic: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
TRAFFIC			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that the traffic impacts of the project are mitigated and managed. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Health, safety, environmental and community incident and complaints management system register. Monitoring and audit reports. Incident classification and reporting management procedure (to be developed). PPE Register. Occupational health and safety plan (to be developed). Health and safety protocol (to be developed). Traffic and transportation management plan 			
Signage and Notifications	Post relevant road signage along affected routes.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	The developer shall ensure that the contractor erects temporary signs warning motorists of construction vehicles on the approaches to the access road.	<ul style="list-style-type: none"> Contractor Developer EO 	
Dust Emissions	Reduce travel speed for construction vehicles on the gravel road to reduce dust	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Construction
	Dust suppression of the roads in the immediate vicinity of the site where feasible		
Vehicle Management	Ensure all vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
Road Management	Ensure that the roads are left in the same or better condition, post-construction.	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The developer shall ensure that the condition of the roads impacted by construction of the development is left in a similar or better state once the construction phase is complete.	<ul style="list-style-type: none"> Contractor Developer 	
	The developer shall ensure that the contractor provides the necessary driver training to key personnel to minimise the potential of incidents on the public road network.	<ul style="list-style-type: none"> Developer 	
Permits	A permit must be obtained from the relevant authority for any abnormal loads transported.	<ul style="list-style-type: none"> Site Manager Contractor EO Operator 	<ul style="list-style-type: none"> Construction Operation Decommissioning

Table 6-18 – Socio-Economic: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
SOCIO-ECONOMIC			
Impact Management Outcome: <ul style="list-style-type: none">To ensure that the negative socio-economic impacts are mitigated and managed.To ensure that the positive socio-economic impacts are enhanced.			
Indicator and Compliance Mechanism: <ul style="list-style-type: none">Induction training and records.Health, safety, environmental and community incident and complaints management system register.Monitoring and audit reports.Incident classification and reporting management procedure (to be developed).PPE Register.Occupational health and safety plan (to be developed).Health and safety protocol (to be developed).Employment records and community engagement local enterprise development records.			
Community	A community awareness campaign to be implemented in the surrounding communities to sensitise community members to traffic safety risks and communicable disease awareness.	<ul style="list-style-type: none">Site ManagerContractorDeveloper	<ul style="list-style-type: none">Construction
	A detailed influx management plan should be developed.		
	As part of onboarding workers, training should be provided on preventing GBV SEA and SH.		
	Increase security in the Project area should be provided to regulate access to the site and prevent informal settlements.		
	Local employment should be a priority for the construction contractor. Training programmes must be implemented to enable local participants in employment opportunities.	<ul style="list-style-type: none">Site ManagerContractor	
	No recruitment should occur at the Project gate to prevent informal settlements around the Project site.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Social	Communities near the Project should be given special consideration regarding the benefits arising from the Project, as they will be most affected.	■ Developer	
	Principal Engineer should first preference appropriate subcontractors in the surrounding communities, followed by those in the municipal area and those outside the province.	■ Site Manager ■ Contractor ■ Developer	
	Recruitment policies must ensure preference for residents. Additionally, a monitoring system should be implemented to assess local employment levels. A local skills database should be developed and updated regularly to maximise the uptake of local labour.		
	Resources required during construction should be sourced, preferably from local businesses. Accommodation needed for contractors should favour local guesthouses and hotels.		
	Develop alternative projects which can support the local economy.		
	Engage local and regional government concerning the decommissioning phase.		■ Decommissioning
Design	Adjust tilt angles of the panels if glint and glare issues become evident on sensitive receptors, where possible.	■ Developer	■ Operation
	If specific sensitive visual receptors are identified during operation, investigate screening at the receptor site, where possible.		
	Use anti-reflective panels and dull polishing on structures, where possible and apply the industry standard.		
Employment	During the operational phase, locally employed individuals should receive training and undergo skills development programmes.	■ Operator	■ Operation
	Employees should be allowed the opportunity to participate in mentorship programmes to further their development.		
	Assisting employees seeking alternative employment at other power plants or related facilities.	■ Developer	■ Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Timely and adequate consultation with employees dependent on the Project for employment.		
	Training and educating employees to equip them with skills that could benefit them in other industries.		
Decommissioning	Disposal according to local regulations and other directives such as the European Batteries Directive.	■ Developer	■ Decommissioning
	End-of-Life shutdown procedure must be undertaken, including a risk assessment of the activities involved.		
	End-of-life, which is affected by temperature and time, cycles etc., should be predefined, and monitoring should be in place to determine if it has been reached.		
	Where possible, re-purpose the solid-state batteries/containers and equipment with the associated environmental impact considered.		

7 MANAGEMENT PLANS

A number of generic management plans have been included in the EMPr. The plans included below provide an indication of the requirements that must be followed on the proposed construction and operation of the Merafong SEF. It must be noted that many of these plans can be updated at any stage depending on any changes that may occur on the site.

The following specific plans have been compiled:

- Emergency Response Plan (ERP);
- Waste Management Plan;
- Hazardous Substance Management Plan;
- Fire Management Plan;
- Alien Invasive Plant Management Plan;
- Re-vegetation and Habitat Rehabilitation Plan;
- Stormwater Management Plan;
- Erosion Management Plan;
- Fauna Management Plan;
- Soil Management Plan;
- Heritage and Palaeontological Management Plan;
- Grievance Mechanism; and
- HIV/AIDS Management Plan.

7.1 EMERGENCY RESPONSE PLAN

Appropriate resources must be provided to respond to accidental and emergency situations for operations and activities during construction and operation phases. The procedures will include plans for addressing training, resources, responsibilities, communication and all other aspects required to effectively respond to emergencies associated with their respective hazards.

This Emergency response plan (ERP) is intended as a practical working document for the proposed Merafong SEF. The purpose of this document is to provide the basic guidelines on how to respond to potential emergency situations that may arise during project activities. These potential emergency situations include medical emergencies and fires.

All activities associated with the project will require site-specific emergency response plans to mitigate impacts, which meet or exceed all applicable regulations.

The objectives of this plan are as follows:

- Protect the communities and the environment through the development of emergency response strategies and capabilities.
- Set out the framework for hazard identification in order to define procedures for response to the situations including the development of contingency measures.
- Structure a process for rapid and efficient response to and manage emergency situations during the construction and operational phases of the project.
- Assign responsibilities for responding to emergency situations.

The ERP must take the incident procedures referred to in Section 30 of the NEMA into account.

7.1.1 ROLES AND RESPONSIBILITIES

With respect to this plan, the Project Company (via the appointed EPC contractor/contractor/principal contractor) has the responsibility to:

- Provide emergency response services (such as first aid and firefighting representative) and to structure and coordinate emergency response procedures for the project.
- Ensure that specific emergency responsibilities allocated to them are organised and undertaken.
- Ensure that employees and contractor third parties are trained and aware of all required emergency procedures.

7.1.2 EMERGENCY COMMUNICATIONS AND COORDINATION PLAN

In an emergency situation where there is an immediate threat to communities, personnel or the environment, the Project Manager will be notified immediately. The Project Manager will dispatch the Emergency Response Coordinator (or suitably tasked person) who will determine the appropriate plan of action depending on the severity of the emergency, the people affected, and the need to evacuate.

If there is a developing emergency or unusual situation, where an emergency is not imminent, but could occur if no action is taken, the Project Manager (or if the Project Manager is absent the Environmental Officer) is to be informed immediately. Once the emergency or unusual situation has been managed, the correct incident/near miss must be reported to the General Manager.

If an emergency situation poses a direct threat to communities in the area, the Environmental Officer and/or Social Officer will advise persons in the vicinity of the emergency to evacuate due to the potential risk. The appropriate government authorities will immediately be notified of such an emergency evacuation. The Emergency Response Coordinator (or suitably tasked person) will be tasked with responding to the potential risk. Should the emergency situation be such that it can be managed by Merafong, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risks.

7.1.3 RESPONSE TO INCIDENTS

An incident is any occurrence that has caused, or has the potential to cause, a negative impact on people, the environment or property (or a combination thereof). It also includes any significant departure from standard operating procedures. The reporting and investigation of all potential and actual incidents that could have a detrimental impact on human health, the natural environment or property is required so that remedial and preventive steps can be taken to reduce the potential or actual impacts because of all such incidents.

The actions resulting from any formal or informal investigations will be used to update the EMPr.

7.1.4 BUDGET FOR EMERGENCY RESPONSE

Costs for emergency response and management will be included in the capital expenditure budget for the construction phase and operational budget for the operational and decommissioning phases of the project.

7.1.5 VERIFICATION

An environmental emergency response system will be developed for the execution of emergency drills that will include the following, inter alia:

- Fire Drills
- Emergency Evacuation Drills
- Medical and Environmental Drills.

Reporting and monitoring requirements for the plan will include:

- Monthly inspections and audits
- Quarterly reporting of accidents/ incidents
- Reporting at the time of the incident and monthly spill reporting developed by the Environmental and Quality, Health and Safety departments
- Bi-annual emergency response drills
- Annual reporting on training

Emergency response drills and reporting will be maintained by the Project Manager and will provide information regarding required revisions to training or the emergency response actions. Each incident reported will be reviewed and investigated upon occurring. Actions will be identified where possible to improve the site's overall response to emergencies. Updates/revisions that are necessary to protect worker or community health and safety will be implemented immediately after approval by the General Manager. On a bi-annual basis, Key Performance Indicators (KPIs) will be compared against past-performance and analysed for trends to determine if there are areas for improvement. Changes because of the trend analysis and identified areas for improvement will be implemented following the project's change management system as required.

7.2 WASTE MANAGEMENT PLAN

7.2.1 WASTE HIERARCHY

A waste is any solid, liquid or contained gaseous material that is being discarded by, disposal, recycling, burning or incineration. Waste management options for a particular waste need to be considered according to the Waste Management Hierarchy (**Figure 7-1**) which reflects the relative sustainability of each of the options. One of the key principles underlying the waste management hierarchy is to ensure that waste is dealt with as high up the waste hierarchy as possible. Since all waste disposal options have some impact on the environment, the only way to avoid impact is not to produce waste in the first place, and waste reduction is therefore at the top of the hierarchy. Re-use, followed by recovery techniques (recycling, composting and generating energy from waste) follow, while disposal to landfill or by incineration (the worst options) are at the bottom of the hierarchy.

In deciding on the most appropriate disposal route, both environmental and economic costs and benefits need to be considered. This decision must be reached taking into account all the costs and impacts associated with waste disposal, including those associated with the movement of waste.

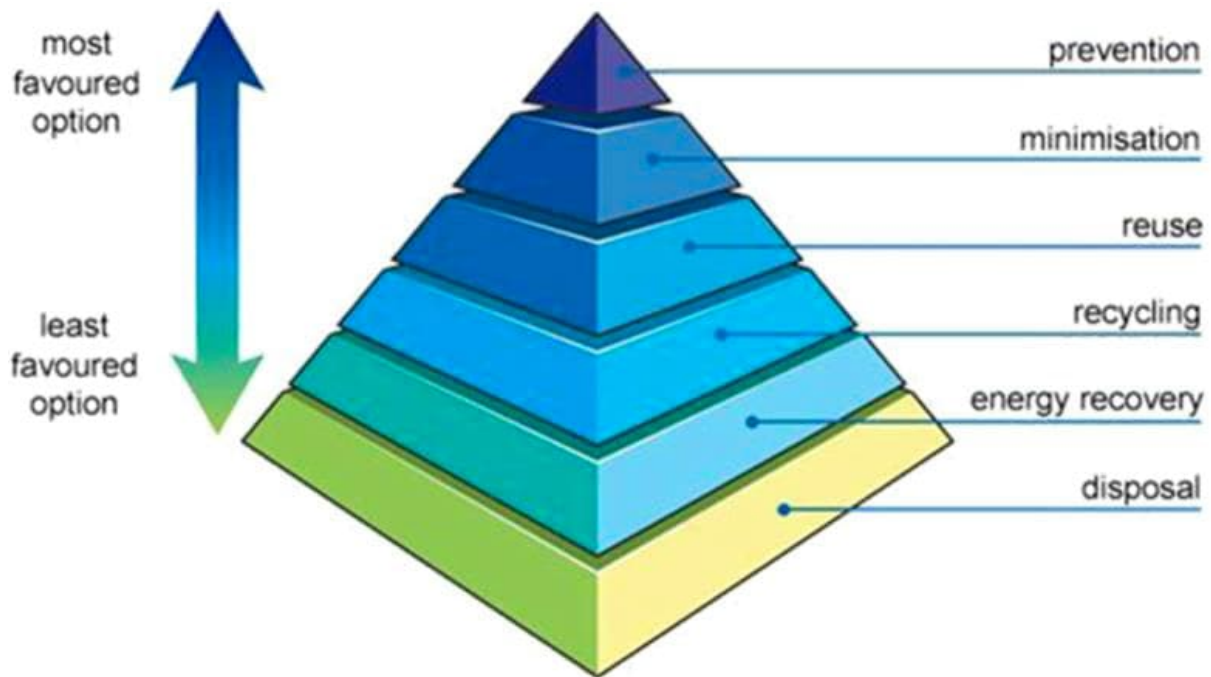


Figure 7-1: Waste Hierarchy

7.2.2 PROJECT STAGES

The purpose of this section is to assess the construction, operational processes of the proposed Merafong SEF in order to identify short comings, like raw materials procurement, infrastructure, employee training, health and safety, transportation, storage, compliance with legislative requirements, emergency preparedness and waste streams arising from an operation and its related activities, as well as the current waste management practices per waste stream. The assessment serves as the baseline against which any problem areas or gaps in waste management practises, process technology and environmental authorisations are identified and against which future performance objectives, activities and targets can be set.

The project stages are described below with the waste generation and management methods described in the corresponding tables below them including:

- Details on how waste will be managed during the construction and operational phases taking into consideration the waste management hierarchy;
- Details of the procedure for the separation of non-recyclable and recyclable waste;
- Details of the management of non-recyclable waste i.e. how waste will be stored on site during construction and operational phases, including the frequency for the removal of waste from the site and an indication of the landfill site where it will be disposed;
- Details for the management of recyclable waste e.g. the type of waste materials that will be recycled on site and the details pertaining to the offloading, sorting, handling, storage and collection procedures for the waste types (e.g. compaction and bailing, breaking of glass etc.); and
- The frequency for the removal of waste from the proposed development to where it will be finally managed must be included.

Waste Management at the project site will be undertaken in line with the EMPr to consider the correct disposal of general and hazardous waste generated on the project. **Table 7-1** describes the different waste products that the proposed project will produce, as well as the various options to dispose of them. Waste will mainly be generated during the construction phase. During operation, contractors are only on the site for limited amount of time as and when maintenance is required.

Table 7-1 - Waste Management Options

Waste	Type of Waste	Management Options
Hydrocarbons (Contaminated soil)	Hazardous	<ul style="list-style-type: none"> Fuel and oil spillages can be a source of contamination of water sources and the soil. Management options include: <ul style="list-style-type: none"> Using spill kits to clean any spillages; Ensure storage facilities are maintained and meet industry regulations; Transportation and storage of fuel must be regulated and correctly managed according to the EMPr; All hazardous waste is to be disposed of at a registered hazardous landfill (safe disposal certificates must be obtained).
Contaminated Personal Protective Equipment (PPE)	Hazardous	<ul style="list-style-type: none"> PPE can be contaminated during handling of hydrocarbons. Management options include: <ul style="list-style-type: none"> Store contaminated PPE in hazardous waste skips along the servitude; Ensure contaminated PPE is disposed of at a registered hazardous landfill (safe disposal certificates must be obtained).
General waste	General	<ul style="list-style-type: none"> General waste (inorganic matter) can be disposed of as per normal and form part of the municipal waste management system. Management options include: <ul style="list-style-type: none"> Ensure waste is stored securely in refuse bins; Co-ordinate waste removal with the general removal of waste from the contractor laydown area .
Food waste	General	<ul style="list-style-type: none"> Food waste is generated as site personnel take their meals on the construction site. Management options include: <ul style="list-style-type: none"> Store any waste and packaging into a labelled food waste bin; Co-ordinate waste removal with the removal of waste from the contractor laydown area; and Co-ordinate waste removal with the general removal of waste.

7.3 HAZARDOUS SUBSTANCES MANAGEMENT PLAN

Hazardous substances are chemicals or materials that can cause acute or chronic harm to health, be it humans or the environment. The key potential sources of impact related to the management of hazardous chemical substances (HCS) and fuel during construction relate to the risk of accidental release of hydrocarbons to the environment, accidental exposure to workers, and fire and explosion risks.

Potential impacts associated with these risks, if poorly managed, include:

- Impact to soil and/or groundwater, which may result in degradation of the resource and requirement for remedial action;

- Impacts on pastoralist livelihoods due to contamination of pasture or water resources and consequent impacts to their, health, livelihood and animals;
- Impacts on human health & safety due to either direct exposure or through fire/explosion;
- Gas emissions associated with the combustion of fuel, are mainly compounds of nitrogen, carbon including very small traces of sulphur and particulate matter; and
- Fugitive emissions from HCS & fuel storage.

The purpose of this Hazardous Substances Management Plan (HSMP) is to provide a framework for the management of hazardous substances onsite during the construction and operation of the Merafong SEF:

- Ensure the handling and storage of hazardous substances are in accordance with relevant standards;
- To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons;
- To ensure that the storage and maintenance of machinery onsite does not cause pollution of the environment or harm to persons.

7.3.1 HAZARDOUS SUBSTANCES MANAGEMENT PROCEDURE

A plan for managing the transportation, delivery, storage and handling of hazardous substances onsite is detailed below. A method statement detailing the specific storage and handling practices during construction must be prepared by the Contractor prior to the commencement of construction.

REGISTER OF HAZARDOUS SUBSTANCES

Contractors shall establish inventories or registers of hazardous substances on site. The inventory is to be updated when new hazardous substances are introduced to the workplace or the use of existing hazardous substances is discontinued. Both the chemicals' register and the Material Safety Data Sheets (MSDSs) must be readily available at a central location or near where the chemicals are being stored or used.

MSDS

It is standard practice that an MSDS is provided by the manufacturer or supplier of all hazardous substances. An MSDS is required for all chemicals and substances on site. These MSDSs are to be made available to all parties affected by the use or storage of the chemical. MSDSs are the key to communicating hazards and safe handling practices for chemicals. In addition, MSDS information is to be made available to all employees.

DELIVERIES

Transport of all hazardous substances must be in accordance with the relevant legislation and regulations. Contractors are responsible for identifying and securing any necessary permits for any proposed bulk fuel storage arrangements. The supplier will fill contractors fuel tanks; fuelling is the responsibility of the licensed contractor who will be supervised by the storage/work area supervisor. No 'black-market' or 'grey-import' fuels shall be used. All fuels purchased must be legitimate and subject to required duties and taxes.

Prior to fuel transfer the operator will verify that: all fuel transfer hoses have been connected properly and couplings are tight; transfer hoses are not obviously damaged; fuel transfer personnel are familiar with procedures; for fuelling stations, personnel are located at both the fuel truck and

fuel transfer tank(s) and have the ability to shut off fuel flow manually; a means of communication has been established between the two people transferring fuel; and a high liquid level shutoff device can be substituted for the person at the delivery tank, in which case operation of the shutoff will be verified each time it is used; The fuel contractor will clean up and report any accidents or spills immediately to the project ESHS team.

ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY

The following requirements are additional to any applicable requirements established in other management plans such as the Occupational Health & Safety Management Plan:

- Storage facilities will have the applicable MSDS available;
- Smoking will be strictly prohibited from any areas where fuel loading operations take place;
- Appropriate signage will be used to identify potential spill risks;
- Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. The extent of damage will be reported in writing as well as remedial repairs effected together with the date of repairs and any follow up inspection. Any release of fuels or other substance will be cleaned up;
- All used fuel / oil products will be collected in tanks marked “Waste Oil”; and
- All hydrocarbon associated wastes will be managed in line with the Waste Management Plan.

MATERIALS STORAGE

- All temporary hydrocarbon storage will be situated above ground. There will be no buried storage tanks permitted.
- All chemicals, fuels and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance as per the requirements of SABS 089:1999 Part 1. The bunded area will contain 110% volume of the largest container stored.
- Bunds and service area platforms to be cleaned and maintained regularly.
- SABS approved Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. The relevant construction crew members must be trained in their use.
- Keep a record of all hazardous substances stored on site. Clearly label all the containers storing hazardous waste.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.
- Chemical and hydrocarbon storage facilities shall be covered to prevent rainfall ingress into secondary containment units and well-ventilated
- Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with.
- An effective monitoring system must be put in place to detect any leakage or spillage of all hazardous substances during their transportation, handling, installation and storage.

SPILL AND LEAK MANAGEMENT AND PREVENTION

- In the event of a major spill or leak of contaminants, the relevant authorities must be informed. The relevant construction crew members must be trained in their use.
- Spilled cement must be cleaned up immediately and, stored as hazardous waste and disposed of at a suitably licensed hazardous waste disposal facility.

- Routine servicing and maintenance of vehicles must not be undertaken onsite (except for emergencies). If repairs of vehicles must take place, an appropriate drip tray must be used to contain any fuel or oils.
- Any water that collects in bunds must not be allowed to stand. Should the water be contaminated, it is to be removed and treated prior to discharge, or disposed of as hazardous waste. Clean stormwater contained within the bunds may be reused.
- No chemicals must be stored or vehicle maintenance undertaken within 100m of wetlands or drainage lines.
- Construction machinery must be stored in an appropriately sealed area. If machinery cannot be stored in a sealed area then a drip tray must be used to prevent spillage from any leaks.
- As far as practicable, all equipment servicing / maintenance shall be undertaken within designated workshop areas.
- All generators on site, including generators that are not in use must be located in a bunded area or on a drip tray.
- Bunded areas and drip trays must be maintained on a regular basis.
- Diesel generators and water pumps shall be located in secondary containment areas or shall be self-contained to prevent loss of fuels and oils;
- Precautions must be in place to limit the possibility of oil and other toxic liquids from entering the soil or clean stormwater system.
- Upon completion of construction, the area must be cleared of potentially polluting materials.
- Emergency response planning will be managed via the Emergency Preparedness and Response Plan.

7.3.2 OPERATIONAL PHASE

During the operational phase of the project limited hazardous substances and chemicals will be stored onsite. During maintenance activities, contractors will need to produce a method statement detailing the specific storage and handling practices. The following measures need to be implemented onsite during the operational phase of the project.

- Hazardous substances must be stored in sealed containers within a clearly demarcated designated area.
- Care must be taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Handling of these materials must take place within an appropriately sealed and bunded area.
- Should any accidental spillage take place, it must be cleaned up according to specified standards regarding bioremediation.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.
- Used oils and chemicals:
- Appropriate disposal must be arranged with a licensed facility in consultation with the administering authority;
- Waste must be stored and handled according to the relevant legislation and regulations.

7.3.3 INSPECTION, MONITORING AND TRAINING

Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.

The contents of the Hazardous Substances Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the relevant Training Procedure.

Examples of Toolbox Talks include:

- Storage of hazardous substances
- Working with hazardous substances
- Management of hazardous waste
- Spill Prevention

7.4 FIRE MANAGEMENT PLAN

The purpose of this plan is to address firefighting requirements throughout the construction of the project and to preserve and protect human life as well as tangible goods and equipment in the event of a fire.

Mitigation and management measures include, but are not limited to the following:

- All construction camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and must be readily accessible.
- The Contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures must include appropriate instruction of employees about fire risks and designated smoking areas.
- Fire prevention facilities must be present at all storage facilities. No open fires shall be allowed on site under any circumstance. No cooking on open fires shall be done onsite to prevent runaway fires.
- The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.
- Emergency numbers for local police and fire department etc. must be placed in a prominent area.
- Firefighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank.
- All construction staff must be trained in fire hazard control and firefighting techniques. Translators are to be used where necessary.
- All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.
- Smoking must only be conducted in demarcated areas.
- Firefighting equipment must be regularly maintained by a suitable service provider.

7.5 ALIEN INVASIVE PLANT MANAGEMENT PLAN

The purpose of this Plan is to provide a framework for the management of alien and invasive plant species during the construction and operation of the project, which in turn serves to manage open spaces, as required. The broad objectives of the plan include the following:

- Ensure alien plants do not become dominant in parts or the whole site through the control and management of alien and invasive species presence, dispersal and encroachment.
- Managing and maintaining the ecosystem in a near-natural state and restoring and/or rehabilitating the ecosystems to such a state.

- Develop and implement a monitoring and eradication programme for alien and invasive species.
- Promote the natural re-establishment and planting of indigenous species in order to retard erosion and alien plant invasion.

Mitigation and management measures include, but are not limited to the following:

- Monitor for early detection, to find species when they first appear on site. This should be as per the frequency specified in the management plan, and should be conducted by an experienced botanist. Early detection should provide a list of species and locations where they have been detected. Summer (vegetation maximum growth period) is usually the most appropriate time, but monitoring can be adaptable, depending on local conditions.
- Monitor for the effect of management actions on target species, which provides information on the effectiveness of management actions. Such monitoring depends on the management actions taking place. It should take place after each management action.
- Monitor for the effect of management actions on non-target species and habitats.
- Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding.
- Alien vegetation and the spread of exotic species on the site will need to be controlled.
- The contractor must be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.
- Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only suitable herbicides shall be used.
- The use of pesticides and herbicides on the site must be discouraged as these can impact on important pollinator species of indigenous vegetation. Use of these should only be permitted where absolutely necessary.
- Correct rehabilitation with locally indigenous species.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.
- Constant maintenance of the area to ensure re-colonisation of floral species.
- Ensure regular removal of alien species, which may otherwise jeopardise the proliferation of indigenous species.
- Annual on-site alien invasive species monitoring should be conducted. Monitoring should focus on:
 - All sites disturbed during the construction phase;
 - Riparian/wetland areas adjacent to construction sites; and
 - Monitoring should assess species type and density, and these data should inform the scope of ongoing alien invasive species control.

7.6 RE-VEGETATION AND HABITAT REHABILITATION PLAN

The purpose of the rehabilitation plan is to ensure that areas cleared or impacted during construction activities are rehabilitated with a plant cover that reduces the risk of erosion from these areas as well as restores some ecosystem function. The purpose of the rehabilitation plan for the site can be summarised as follows:

- Achieve long-term stabilisation of all disturbed areas to minimise erosion potential.

- Re-vegetate all disturbed areas with suitable local/indigenous plant species or grass/crop.
- Minimise visual impact of disturbed areas.
- Ensure that disturbed areas are safe for future uses.

Mitigation and management measures include, but are not limited to the following:

- Rehabilitation Plan must be compiled by an approved ecologist prior to the start of construction and decommissioning.
- All management actions associated with rehabilitation must be recorded after each management action has taken place.
- All rehabilitated areas should be monitored to assess vegetation recovery. This should be for a minimum of three years after post-construction rehabilitation but depends on the assessed trajectory of rehabilitation (whether it is following a favourable progression of vegetation establishment or not – this depends on the total vegetation cover present, and the proportion that consists of perennial growth of desired species). For each monitoring site, an equivalent comparative site in adjacent undisturbed vegetation should be similarly monitored. Monitoring data collection should include the following:
 - total vegetation cover and height, as well as for each major growth form;
 - species composition, including relative dominance;
 - soil stability and/or development of erosion features;
 - representative photographs should be taken at each monitoring period.
- Monitoring of rehabilitated areas should take place at the frequency and for the duration determined in the rehabilitation plan, or until vegetation stability has been achieved.
- Re-vegetation must aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.
- Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. This must be done through seeding with suitable crop or locally indigenous species typical of the representative botanical unit.
- Re-vegetation of the disturbed site is aimed at approximating as near as possible the existing vegetative conditions prevailing prior to construction.
- Seeds from surrounding seed banks can be used for re-seeding.
- Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.
- Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads. In this respect, the recommendations from the Biodiversity Assessment must be applied strictly. Personnel must be adequately briefed on the need to restrict habitat destruction, and must be restricted to the actual construction area.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.
- Monitoring of rehabilitated and revegetated sites should be conducted annually during decommissioning and for a two-year period after decommissioning;
- Key aspects that should be monitored include:
 - Successful establishment and coverage of vegetation;
 - Sites of erosion;

- The findings of monitoring should be used to inform the need for additional rehabilitation and/ or corrective actions.

7.7 STORMWATER MANAGEMENT PLAN

The main principles in stormwater management include:

- Confine or divert any unpolluted water to a 'clean' water system, and polluted water to a 'dirty' water system;
- 'Clean' and 'dirty' water systems must be designed and constructed to prevent cross-contamination between the 'clean' and 'dirty' water systems; and
- Appropriate maintenance and management of storm water related infrastructure.

The proposed water systems or infrastructure are to be designed to prevent any potential contamination of natural water resources in the area.

A Storm Water Management and Surface Water Protection Plan cannot be compiled until the detailed designs are complete. It is stipulated in this EMP that a Storm Water Management Plan must be compiled before any construction commences and implemented during the construction phase. This plan must indicate how all surface runoff generated as a result of the project and associated activities (during both the construction and operational phases) will be managed prior to entering any natural drainage system or wetland and how surface water runoff will be retained outside of any demarcated buffer zones and subsequently released to simulate natural hydrological conditions.

A Storm Water Management Plan will be required to support the relevant facility processes. A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. The stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions, Reno mattresses or similar) of exposed soil and the revegetation of any disturbed water courses.

It is assumed that once constructed, the foundation excavation will be backfilled, topsoiled, and grassed. This will result in clean runoff from the site. It is recommended that runoff be allowed to free-drain back into the environment as overland flow, as opposed to concentrating the flow and introducing a risk of localized erosion at the outlet point.

7.8 EROSION MANAGEMENT PLAN

In general, the main erosion risks are channel outlets, roads, road crossings, foundation excavations and stockpiles. Erosion on roads is excluded as a risk as this is unlikely as long as the roads have no significant camber.

In the case of stockpiles and foundation excavations, diversion berms or silt fences are recommended to be placed on the upslope and downslope respectively. Topsoil that is cleared for the development of the development footprints and hardstand areas should be stockpiled for the decommissioning and rehabilitation of the facility. The stockpiles, if possible, should have gentle slopes of 1 in 5 or less to encourage revegetation and limit erosion. The stockpile should be bunded until it revegetates. The gently slopes will necessitate a stockpile with a larger surface area. This is considered the lower impact option as it limits erosion though it disturbs more surface area.

Sometimes, material excavated during construction of foundations might be significant (cumulative volume). If that is the case, the material should be removed from and disposed of off-site responsibly (e.g., use cover material on landfill site).

Exposed and unprotected soils are the main cause of erosion in most situations. Therefore, this erosion management plan and the revegetation and rehabilitation plan are closely linked to one another and should not operate independently but should rather be seen as complementary activities within the broader environmental management of the site and should therefore be managed together. This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion, including:

- Material stockpiled for long periods (2 weeks) must be retained in a bermed area.
- Stockpiles not used in three (3) months after stripping must be covered with hessian or a similar material to prevent dust and erosion.
- Sensitive areas need to be identified prior to construction so that the necessary precautions can be implemented.
- Any vegetation clearance must be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.
- Areas to be cleared must be clearly demarcated and this footprint strictly maintained.
- Silt fences and erosion control measures must be implemented in areas where these risks are more prevalent.
- Wind screening and stormwater control must be undertaken to prevent soil loss from the site.
- Other erosion control measures that can be implemented are as follows:
 - Brush packing with cleared vegetation
 - Mulch or chip packing
 - Planting of vegetation
 - Hydroseeding / hand sowing
- All erosion control mechanisms need to be regularly maintained.
- Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.
- Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. This must be done through seeding with indigenous grasses.
- No impediment to the natural water flow other than approved erosion control works is permitted.
- To prevent stormwater damage, the increase in stormwater run-off resulting from construction activities must be estimated and the drainage system assessed accordingly.

7.8.1 MONITORING

The site must be monitored continuously during construction and operation in order to determine any indications of erosion. If any erosion features are recorded as a result of the activities on-site the Environmental Officer (during construction) or Site Manager (during operation) must:

- Assess the significance of the situation.
- Take photographs of the soil degradation.
- Determine the cause of the soil erosion.
- Inform the contractor/operator that rehabilitation must take place and that the contractor/operator is to implement a rehabilitation method statement and management plan.
- Monitor that the contractor/operator is taking action to stop the erosion and assist them where needed.

- Report and monitor the progress of the rehabilitation weekly and record all the findings in a site register.
- All actions with regards to the incidents must be reported on a monthly compliance report which will be submitted to the Competent Authority (during construction) and kept on file for consideration during the annual audits (during construction and operation).

The Contractor (in consultation with an appropriate specialist) must:

- Select a system/mechanism to treat the erosion.
- Design and implement the appropriate system/mechanism.
- Monitor the area to ensure that the system functions like it should. If the system fails, the method must be adapted or adjusted to ensure the accelerated erosion is controlled.
- Continue monitoring until the area has been stabilised.

7.9 FAUNA MANAGEMENT PLAN

The purpose of this fauna management plan is to protect species, habitats and eco-system services, ensuring no net reduction to any critically endangered / endangered species and no net loss of any critical habitats (as defined by IFC Performance Standard 6) whilst minimising disturbance to other species and habitats to the extent practicable. This plan provides a strategy to control potential impacts on fauna during the construction and operation of the Merafong SEF.

7.9.1 MANAGING IMPACT ON FAUNA

SNAKE FIND AND HANDLING:

During construction, especially clearing of vegetation, it is likely that snakes will be encountered onsite. The following steps need to be undertaken in the event of a snake onsite:

- All work in that area is to cease;
- The site foreman/ site supervisor is to be notified;
- Snake handling will be undertaken by suitably trained and certified onsite personnel. The site supervisor or foreman needs to contact the relevant onsite personnel, who will safely remove and release the snake at a suitable habitat.

The following measures need to be communicated to all staff to ensure both human and snake safety:

- Under no circumstances may any site staff handle snakes without the proper snake handling training.
- All staff are to be provided with the correct Personal Protective Equipment (PPE) (e.g. snake gaiters and safety boots) to limit the potential for snake bites.
- Signage identifying the service provider appointed for snake handling must be erected around site. It is recommended that an individual onsite undergoes snake handling training to ensure that if an emergency arises it can be dealt with immediately.
- Intentional harming of snakes is prohibited onsite.

MAMMALS AND REPTILES

During the construction phase of the project the following mitigation measures need to be implemented and adhered to at all times to ensure that the impacts to fauna is managed and mitigated where possible.

LIMIT THE DEVELOPMENT FOOTPRINT

- The development area must be clearly defined and marked off accordingly. All No- Go areas must be demarcated and warning signs prohibiting access erected.
- Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing/ disturbance.

LIMIT DISTURBANCE

- The extent of clearing and disturbance to the native vegetation must be kept to a minimum so that the impact on fauna and their habitats is restricted.
- Where roads pass right next to major water bodies provisions must be made for the fauna such as toads to pass under the roads by using culverts or something similar.
- Vehicles to adhere to speed limits at all times.
- The intentional harming and killing of animals will be prohibited through on-site supervision and worksite rules.
- Any litter onsite needs to be cleaned up immediately to prevent it being blown into the environment surrounding the development site.

INSPECTIONS AND MONITORING

- The following inspections and monitoring need to be undertaken during the construction phase:
- Observation of vegetation clearing activities by the Environmental Control Officer (ECO).
- Recording faunal fatalities to monitor success of relocation efforts.
- Regular monitoring of construction activities by the designated onsite personnel and the ECO.
- The ESHS team will collate details and investigate all Project-related wildlife complaints and incidents including instances of unauthorised hunting, poaching, bush trade, disturbance of breeding sites and injuries / fatalities. Corrective actions will be instigated where needed to avoid recurrence.

TRAINING

The contents of the Fauna Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the relevant Training Procedures

Examples of Toolbox Talks include:

- Snakes bites
- Snake handling
- No-Go areas
- Encountering fauna onsite
- Poaching

7.10 SOIL MANAGEMENT PLAN

Some of the most significant impacts on soil properties occur as a result of activities associated with construction. Construction activity can have adverse impacts on soil in a number of ways by:

- Covering soil with impermeable materials, effectively sealing it and resulting in significant detrimental impacts on soils' physical, chemical and biological properties, including drainage characteristics.
- Contaminating soil as a result of accidental spillage or the use of chemicals.

- Over-compacting soil through the use of heavy machinery or the storage of construction materials.
- Reducing soil quality, for example by mixing topsoil with subsoil.
- Wasting soil by mixing it with construction waste or contaminated materials, which then have to be treated before reuse or even disposed of at landfill as a last resort.

Careful management of topsoil and subsoil is an important aspect of sustainable use of materials that are being stripped. Without a proper Soil Resource Plan there is the risk of losing, damaging or contaminating valuable soil resources. The purpose of this Soil Management Plan is to outline principles for soil management to ensure the integrity of the resource during and post-construction. This plan must be read together with the Emergency Response Plan in order to minimise the risk of contamination of soils.

7.10.1 PRINCIPLES FOR SOIL MANAGEMENT

THE CORRECT HANDLING OF TOPSOIL

- Before beginning work on site, topsoil must be stripped from all areas that will be disturbed by construction activities. Appropriate equipment must be used and appropriate work practices must be implemented for soil stripping as mishandling soil can have an adverse effect on its properties.
- Topsoil must be stripped in the driest condition possible.
- Topsoil must be retained on site in order to be used in site rehabilitation. The correct handling of the topsoil layer is in most cases the key to rehabilitation success.
- It is important that the correct depth of topsoil is excavated in order to ensure good plant growth. If excavation is too shallow, then an important growth medium for new seedlings could be lost. If excavation is too deep, this could lead to the dilution of the seed and nutrient rich topsoil with deeper sterile soil.
- Topsoil and subsoil layers must never be mixed. The mixture of topsoil with the deeper sterile soil hinders the germination of seeds which are buried too deep in the soil layer. Mixture of soil layers also leads to the dilution of nutrient levels which are at highest concentration within the topsoil, resulting in lower levels of nutrients available for new seedlings.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. Stockpiles must not be higher than 2m. Alternatively, topsoil berms can be created on the site boundaries. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- Topsoil must be stored separately from other soil in heaps until construction in an area is complete.
- The duration of topsoil storage must be minimised as far as possible. Storing topsoil for long periods leads to seed bank depletion following germination during storage, and anoxic conditions develop inside large stockpile heaps.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

STRIPPING OF SUBSOIL

- The following protocols must be followed when stripping subsoil:

- On many sites subsoil will not need to be stripped but merely protected from damage. However, on other sites it might need to be temporarily removed. Where subsoil is required to be stripped, this must be undertaken before commencement of construction from all areas that are to be disturbed by construction activities or driven over by vehicles.
- Subsoil stripping depths depend on the correct identification of the sub-soil types on an ad-hoc basis, where no formal survey data exists.
- Subsoil must be stripped in the driest condition possible.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

7.11 HERITAGE AND PALAEOLOGICAL MANAGEMENT PLAN

The purpose of this document is to provide a response guideline should archaeological sites, palaeontological sites or graves become exposed during ground altering activities within the Facility area. Heritage resources are protected in terms of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

7.11.1 CHANCE FIND PROCEDURE

The following procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the Facility area. This chance find procedure (CFP) must be read in conjunction with the Environmental Authorisation, the Environmental Management Programme, Final EIAr and the final layout archaeological ground-truthing report.

The Contractor or other person discovering a potentially significant site or artefact will initiate the following actions:

- Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately, safeguard site with security tape / fence / sand bags if necessary.
- Record key data while fossil remains are still in situ:
 - Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo
 - Context – describe position of fossils within stratigraphy (rock layering), depth below surface
 - Photograph fossil(s) in situ with scale, from different angles, including images showing context (e.g. rock layering)
- If feasible to leave fossils in situ:
 - Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
 - Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume

- If not feasible to leave fossils in situ (emergency procedure only):
 - Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock)
 - Photograph fossils against a plain, level background, with scale
 - Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags
 - Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist
 - Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
- If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.
- Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency;
- The Specialist Palaeontologist must undertake the following:
 - Apply for Fossil Collection Permit Record / submit Work Plan to relevant Heritage Resources Agency.
 - Describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy).
 - Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data.
 - Submit Palaeontological Mitigation report to Heritage Resources Agency.
 - Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.

7.11.2 TRAINING, INSPECTION AND MONITORING

Since it is not practical to have a regular monitoring presence over the construction period by either an archaeologist or palaeontologist, environmental awareness training must be conducted by the EO for all contractors and subcontractors. The training must include, as a minimum, the following:

- Identifying potential features of heritage significance;
- Procedures for dealing with heritage resources discovered on site;
- Applicable Legislation pertaining to the protection of heritage resources; and
- The importance of protecting heritage resources.
- The contents of the Heritage Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks.

7.12 GRIEVANCE MECHANISM

7.12.1 GRIEVANCE MECHANISM - EXTERNAL

A grievance mechanism is a tool used to address affected communities' concerns and complaints and is an important pillar of the stakeholder engagement process, since it creates opportunities for companies and communities to identify problems and discover solutions together. The Project proponent can benefit from understanding community concerns and complaints and addressing them through all stages of project development.

Where it is anticipated that a new project will involve ongoing risk and adverse impacts on surrounding communities, the project proponent is required to establish a grievance mechanism to receive and facilitate resolution of the affected communities' concerns and complaints about the proponent's environmental and social performance. The grievance mechanism should be scaled to risks and adverse impacts of the project, address concerns promptly, use an understandable and transparent process that is culturally appropriate and readily accessible to all segments of the affected communities, and do so at no cost to communities and without retribution. The mechanism should not impede access to judicial and administrative remedies.

This Grievance Mechanism has been developed to receive and facilitate grievances and provide a solution to these concerns and grievances. The aim of the grievance mechanism is to ensure that grievances or concerns raised by local landowners, staff and or communities are addressed in a manner that:

- Provides accessible avenues for all internal and external stakeholders to contact management of the facility;
- Provides a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, lasting and dealt with in a timely manner;
- Builds trust as an integral component of staff and broader community relations activities; and
- Enables more systematic identification of issues and trends affecting a project, facilitating corrective action and pre-emptive engagement.

The aim of this Grievance Mechanism is to address grievances in a manner that does not require a potentially costly and time-consuming legal process. This grievance mechanism also ensures alignment with local and international best practices in human resources development and stakeholder engagement.

OBJECTIVES

The objectives of the grievance mechanism include:

- To be respectful of complainant culture, values, traditions and views;
- To resolve grievances at the local level and in a timely manner;
- To identify the root causes of grievances and address systemic issues;
- To provide a process that is dialogue based, with the complainant and the Proponent cooperating in the investigation, discussion, resolution and announcement of the grievance and result;
- To ensure fair, equitable and consistent outcomes to resolve grievances;
- To enhance and continuously improve the ability of the Proponent to fairly address community concerns.

SCOPE AND RESPONSIBLE PARTIES

A grievance mechanism is primarily for the community to raise relevant concerns about the Project / Proponent's activities and is to be implemented throughout the life cycle of the Project (i.e. throughout assessment, construction, and implementation phases).

WSP will only be involved in the stakeholder engagement and grievance management process for the assessment phase. The Project proponent and the Contractor will be responsible for implementation of the grievance mechanism throughout the construction phase.

GRIEVANCE REDRESS PROCEDURE

This grievance mechanism sets out the following steps to be taken to resolve grievances.

■ Register grievance

1. A grievance can be submitted in a written letter, e-mail, fax, or raised verbally in person or via telephone.
2. Grievances raised during the assessment process are to be submitted to the EAP via the details provided as per the stakeholder engagement notifications. The EAP will notify the Proponent of the grievance.
3. Grievances raised during the implementation process are to be submitted to the Proponent / Contractor via the relevant details, which are to be made available to registered stakeholders prior to commencement of onsite activities, as well as via site notice boards.
4. In the event that a complaint is raised verbally, the responsible person must obtain the approval of the complainant as to the documented complaint (by way of signature of the Receipt of Grievance Form). Should the complainant have literacy issues, the responsible person may request that a third party (friend / relative of complainant) is available to verify / approve the contents of the documented complaint to the satisfaction of the complainant.
5. The submission should include the nature of the grievance, the date when it occurred and the name and contact details of the complainant.
6. Grievances will be accepted anonymously or through a third party (e.g. unions, NGOs, local authorities, community representatives, etc.).
7. Individuals have the right to request that their name be kept confidential throughout the grievance process.
8. As men and women may communicate their grievances differently, and also have different types of grievances, the complainant may request that their grievance is processed by a female / male representative. In the event that such a request is made, the Proponent, as far as reasonably practicable, will accommodate this request.

■ Within a Week (7 days) of receiving the grievance the Proponent will:

1. Enter the grievance into the Proponent's records that track grievances;
2. Assess the grievance according to specific criteria and if necessary, develop an appropriate approach for the particular grievance;
3. Provide a written acknowledgement of the grievance including the name of the responsible person to contact about progress, an explanation of the steps that will be taken to investigate, discuss and resolve the grievance, and an anticipated timetable for processing the grievance.

■ Processing the Grievance:

The responsible person will:

1. Identify the parties involved;
2. Clarify issues and concerns raised by the grievance through direct dialogue;

3. Classify the grievance in terms of seriousness according to the gravity of the allegation, the potential impact on an individual's or a group's welfare and safety, or the public profile of the issue;
4. Convene a staff group with expertise relative to the grievance;
5. Determine the method for resolving the grievance – the most common approaches, not excluding others, will be:
 - The Proponent proposes a solution;
 - The Proponent and aggrieved party decide together the solution;
 - The Proponent and aggrieved party defer to a third party for mediation / arbitration.
6. Gather views of other stakeholders, including those of the Proponent and if necessary, an agreed neutral technical opinion;
7. Determine initial options that parties have considered and explore various approaches for settlement;
8. Conduct the process as agreed;
9. Close the grievances by signing the Complaint Close-Out Form (i.e. that the grievance has been resolved satisfactory to both parties).
10. The Proponent may “close” the grievance even if the complainant is not satisfied with the outcome. This option can be pursued by the Proponent in the case that the complainant is unable to substantiate a grievance, or if there is an obvious speculative or fraudulent attempt. In such situations, the Proponent's efforts to investigate the grievance and to arrive at a conclusion will be well documented and the complainant advised of the situation. The Proponent (or contractors working for the Proponent) will not dismiss grievances based on a cursory review and close them in their grievance record unless the complainant has been notified and had the opportunity to provide supplementary information / evidence;
11. Keep a record that tracks the progress and communications for each grievance.

■ **Processing Timeline**

1. The Proponent will aim to bring the grievance to a resolution within 30 days of receiving the grievance. The grievance shall be acknowledged within 7 days by the responsible person, and responded to within 30 days. If the matter takes longer than 30 days to resolve, the complainant will be informed through dialogue and in writing, of the reason for the delay, any advances or difficulties encountered and the anticipated new resolution date.

RECOURSE

If the complainant is not satisfied with the outcome of the grievance process the aggrieved party has the right to address the grievance via the judicial system.

MANAGING, TRACKING, RECORDING GRIEVANCES – INTERNALLY

In terms of managing grievances the Proponent will:

- Appoint a senior manager to oversee the Grievance Mechanism. Another member of staff will be appointed to carry out the day-to-day work in this area and involve specialist staff and external parties, where required, who may need to be consulted to resolve a grievance.

- Maintain a register of grievances. All activities, including registration of the grievance and the progress through to outcome will be recorded.
- Ensure that grievances and resolutions are communicated internally to all staff through monthly reports.
- Launch the Grievance Mechanism and regularly remind communities that it is available to use.

Contractors are expected to follow this Grievance Procedure. Contractor shall be proactive and available to participate in the grievance resolution processes. Contractor participation is intended to allow for specific contractor grievances to be addressed efficiently.

Contractors shall ensure that all individual contractor employees are aware of the Grievance Procedure.

Contractors will receive any grievance from an individual or community and notify the Proponent thereof immediately.

Contractors shall not make any direct agreements or resolution with local communities without prior coordination of such actions with the Proponent.

The Contractor's community relations team (or equivalent) will attend all coordination meetings requested by the Proponent, as required. The contractor community relations management (or equivalent) will report to the Proponent's management team on a regular basis – in regards to social incidents and community relations issues. The Proponent, or their representative, will conduct regular audits on contractors to ascertain compliance with this Grievance Procedure.

7.12.2 GRIEVANCE MECHANISM - INTERNAL

The Proponent will establish a Grievance Mechanism that will set out the process for workers to communicate their grievances. The grievance mechanism will be available to workers of the Proponent, Contractors and subcontractors.

A Code of Conduct will set out practice measures that the construction workers will have to adhere to, to ensure a positive relationship is built and maintained with the landowners and local communities.

7.13 HIV/AIDS MANAGEMENT PLAN

The HIV/AIDS management plan will be compiled in the event that the project is identified as a preferred bidder as part of the REIPPPP (or a suitable private off-take agreement is concluded).

The measures must be implemented on site during the construction and operational phases:

- Promote a non-discriminatory and supportive environment for people affected by HIV & AIDS.
- HIV-positive employees must be protected against unfair discrimination, victimisation or harassment.
- Sensitive issues surround HIV & AIDS and it is important to handle matters in a discreet and private manner
- Promote awareness and education programmes to inform employees about HIV & AIDS which will enable them to protect themselves and others against infection by HIV.
- Involve employees and their representatives in the planning and implementation of awareness and counselling programmes, especially as peer educators and counsellors.

8 CONCLUSION

Merafong Energy (Pty) Ltd is proposing the development of the proposed Merafong SEF.

The proposed study area is situated east of Carletonville and west of Westonaria within the Merafong City Local Municipality in the West Rand District Municipality of Gauteng, South Africa. The proposed Merafong SEF will be developed within a project area of approximately 311 hectares (ha). The site will be accessed via N12 to the R501, and the R559.

The registration process considered the biophysical location of the proposed development, as well as a feasibility assessment by the proponent, which inter alia served to identify site options that would be optimal for energy storage and grid interconnection. The purpose of the proposed Merafong SEF is to contribute to the national energy targets of diversification of energy supply and the promotion of clean energy. The project will also aid in overcoming the power shortages that are currently faced in the country. Other socio-economic benefits would result from the proposed project, including the increase of energy supply, employment opportunities and local economic development.

It is therefore the opinion of the EAP that provided this project is mitigated, as per the mitigation and management measures outlined in this EMPr, the project will result in impacts that should not negatively affect the environment. It is the applicant's responsibility to ensure that this EMPr is made binding on the contractor by including the EMPr in the contract documentation. The contractor must thoroughly familiarise himself with the requirements of the EMPr and appoint an EO to oversee the implementation of the EMPr on a day-to-day basis. In addition, the applicant must appoint an external ECO to undertake monthly compliance audits during construction against the requirements of the EMPr as well as the SSVR recommendations.

Parties responsible for transgression of this EMPr must be held responsible for any corrective actions that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence must receive penalties.

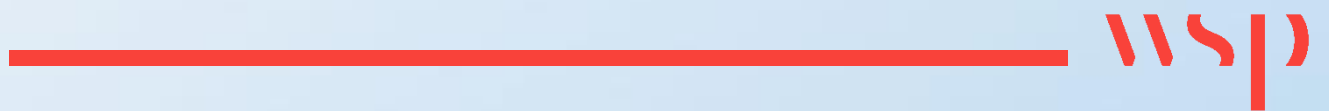
WSP is of the opinion that the project can proceed, provided that the outlined mitigation measures of the registration process and this EMPr are implemented effectively.

In terms of NEMA, everyone (i.e. all persons engaging in any component of this project) is required to take reasonable measures to ensure that they do not pollute the environment. 'Reasonable measures' includes informing and educating employees about the environmental risks associated with their work and training them to operate in an environmentally responsible manner.

The Proponent also recognises that, in terms of NEMA, the cost to repair any environmental damage will be borne by the person responsible for the damage. Should the above-mentioned environmental guidelines and mitigation measures be adopted, it is anticipated that the negative environmental impacts of the proposed Facility will be mitigated adequately. The Proponent and the selected Contractor shall appoint relevant personnel, as well as an independent ECO, to monitor the site periodically throughout construction to ensure that the required environmental controls are in place and working effectively. During operation and maintenance, the area specific Environmental Manager and EO, with the support of the maintenance supervisor, will monitor environmental controls.

Appendix A

EAP CV



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

CAREER SUMMARY

Ashlea is a Principal Associate with 19 years' experience in the environmental field. She currently provides technical and strategic expertise on a diverse range of projects in the environmental management field, including environmental scoping and impact assessment studies, environmental management plans, waste and water management, as well as the provision of environmental management solutions and mitigation measures. Ashlea has been involved in the management of a number of large EIAs specifically within the energy sector such as the Medupi Power Station, and Pebble-Bed Modular Reactor (PBMR) and numerous Renewable Energy Developments and Transmission Powerlines. She also has significant environmental auditing experience and expertise having undertaken over 70 compliance audits. Ashlea holds a Masters in Environmental Management; a BTech (Nature Conservation), and a National Diploma (Nature Conservation). She is also a Registered Environmental Assessment Practitioner.



Countries of experience gained include South Africa, Mozambique, Zimbabwe and Zambia.

9 years with WSP

19 years of experience

Area of expertise

Auditing
ESIR
Energy
Infrastructure
Mining
Training
Waste Management

Language

English – Fluent
Afrikaans - Fluent

EDUCATION

Masters in Environmental Management, University of the Free State, South Africa	2006
B Tech, Nature Conservation, Technikon SA, South Africa	2001
National Diploma in Nature Conservation, Technikon SA, South Africa	1999

ADDITIONAL TRAINING

Conduct outcomes-based assessment (NQF Level 5), South African Qualifications Authority (SAQA)	2009
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PROFESSIONAL MEMBERSHIPS

Registered Environmental Assessment Practitioner (Registration Number: 2019/1005)	2020
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Ashlea Strong

Environmental Planning & Advisory, Principal Associate

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd

May 2013 - present

Lidwala Consulting Engineers

April 2010 – April 2013

GIBB

January 2009 – March 2010

Bohlweki Environmental

August 2004 – December 2008

Vuka Environmental

August 2003 – July 2002

PROFESSIONAL EXPERIENCE

Energy Sector

**G7 Renewable Energies, Karreebosch Wind Energy Facility Project, Matjiesfontein, Western Cape.
2022-2023**

Project Manager

Undertaking of a Part 2 Amendment Process as well as the Amendment of the Environmental Management Programme for a 140MW Wind Energy Facility

**G7 Renewable Energies, Karreebosch to Komsberg 132kV Powerline Project, Matjiesfontein, Western Cape.
2022-2023**

Project Manager

Compilation of a Basic Assessment and Environmental Management Programme for the 132kV Powerline

**Enertrag, Camden Renewable Energy Complex, Ermelo, Mpumalanga.
2021-2023**

Project Manager

Compilation of four Environmental Impact Assessments, three Basic Assessments and associated Environmental Management Programmes for the Camden Renewable Energy Complex, including two wind energy facilities, a solar energy facility, one 400kV Grid Connection and three 132kV grid Connections.

**Enertrag, Dalmanutha Renewable Energy Complex, Belfast, Mpumalanga.
2022-2023**

Project Manager

Compilation of one Environmental Impact Assessment, four Basic Assessments and associated Environmental Management Programmes for the Dalmanutha Renewable Energy Complex, including two wind energy facilities and associated Grid Connections

**Enertrag, Mukondeleli and Impumelelo Wind Energy Facilities, Secunda, Mpumalanga.
2022-2023**

Project Manager

Compilation of two Environmental Impact Assessments, two Basic Assessments and associated Environmental Management Programmes for the Secunda Renewable Energy Complex, including two wind energy facilities and associated Grid Connections

**Red Rocket South Africa Limited, Brandvalley Wind Energy Facility Project, Matjiesfontein, Western Cape.
2021-2022**

Project Manager

Undertaking of a Part 2 Amendment Process as well as the Amendment of the Environmental Management Programme for a 140MW Wind Energy Facility



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Red Rocket South Africa Limited, Bon Espirange to Komsberg 132kV Powerline Project, Matjiesfontein, Western Cape.
2021-2022

Project Manager

Compilation of a Basic Assessment and Environmental Management Programme for the 132kV Powerline

Red Rocket South Africa Limited, Rietkloof Wind Energy Facility Project, Matjiesfontein, Western Cape.

2021-2022

Project Manager

Undertaking of a Part 2 Amendment Process as well as the Amendment of the Environmental Management Programme for a 140MW Wind Energy Facility

Calodex (Pty) Ltd., 100MW Solar Photovoltaic (PV) Plant, Springs in Gauteng, South Africa
2021

Project Director

This project involved the compilation of a Basic Assessment and Environmental Management Plan for a 100MW Solar PV Plant.

Eskom Holdings SOC Limited, Erica 400kV Loop-in-Loop-out (LILO) Powerline, Cape Town, Western Cape, South Africa.

2020

Compilation of an environmental screening assessment for the Erica 400kV LILO Powerline.

BioTherm Energy, Maralla East and West Wind Energy Facilities, Sutherland in the Northern and Western Cape, South Africa.

2019

Project Manager

Compilation of two Part 2 Amendment Process for the changes in technical scope of the Wind Energy Facilities.

Eskom Holdings SOC Limited, Ruigtevallei 132kV Powerline, Gariep in the Free State, South Africa
2019

Project Manager

Compilation of a Part 2 Amendment Process for the deviation of the Ruigtevallei – Dreunberg 132 kV powerline.

Globeleq, Nakonde and Mpika Wind Energy Projects, Zambia
2018

Project Manager

Compilation of two Environmental Project Briefs for the establishment of meteorological masts.

G7 Renewable Energies, Rietkloof Wind Energy Facility Project, Matjiesfontein, Western Cape.
2018

Project Director

Compilation of a Basic Assessment and Environmental Management Programme for a 140MW Wind Energy Facility.

Southern African Power Pool (SAPP), Mozambique – Zambia Interconnector Powerline, Mozambique
2018

Project Manager

This project involved the compilation of the Environmental and Social Impact Assessment and Environmental and Social Management Plan for a 300km 400kV powerline between Tete, in Mozambique, and Chipata, in Zambia.

Eskom Holdings SOC Limited, Ankerlig – Koeberg 132kV powerline walkdown, South Africa
2017



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Project Manager

This project involved the compilation of a Construction and Operation Environmental Management Plans for the Ankerlig – Koeberg 132kV powerline.

WSP | Parsons Brinckerhoff, Gwanda 100MW Solar Project, Gwanda, Matebeleland South Province, Zimbabwe

2018

Project Manager

This project involved the high-level review of the Environmental Impact Assessment for a 100MW Photovoltaic (PV) Solar Project against relevant legislation and international standards.

WSP | Parsons Brinckerhoff, Southern Energy Coal Fired Power Station, Hwange, Zimbabwe

2016

Project Manager

This project involved the high-level review of the Environmental Impact Assessment for the Southern Energy Coal Fired Power Station against relevant legislation and standards.

BioTherm Energy (Pty) Ltd, Proposed Solar and Wind Projects, Aggenys and Sutherland Northern and Western Cape Provinces, South Africa

2015

Project Manager

This project involved the compilation of 15 Environmental Impact Assessments and Environmental Management Plans for 2 Solar and 2 Wind energy Projects.

Central Energy Fund (CEF), Proposed Solar Park, Northern Cape Province, South Africa

2012

Strategic Environmental Advisor

This project involved the provision of process expertise for the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Solar Park.

Eskom Transmission, Proposed Tabor - Nzhelele 400kV Transmission Lines and associated infrastructure, Limpopo Province, South Africa

2012

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 100km 400kV powerline between Louis Trichardt and Musina in the Limpopo Province.

Eskom Holdings SOC Limited, Retrofitting of the existing Electrostatic Precipitators with Fabric Filter Plants at Units 2, 3 and 4 at the Grootvlei Power Station, South Africa

2012

Project Manager

This project involved the compilation of a Basic Assessment Report and Environmental Management Plan for the proposed retrofitting of the existing Electrostatic Precipitators with Fabric Filter Plants at the Grootvlei Power Station.

Parsons Brinkerhoff Africa and Mulilo Power, Proposed Mulilo Coal Fired Power Station and associated infrastructure as well as associated power lines and substations, Musina, Limpopo, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Generation, Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure, Western Cape, South Africa



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Transmissions, Proposed Bantamsklip – Kappa 765 kV Transmission Lines and associated infrastructure, Karoo, Western and Northern Cape, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for four 260km 765kV powerlines between the Bantamsklip Nuclear Power Station Site and the proposed new Kappa Substation.

Eskom Transmission Proposed Bantamsklip – Bacchus, Bacchus - Kappa and Bacchus – Muldersvlei 400 kV Transmission Lines and associated infrastructure, Western and Northern Cape, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Distribution – Central region. Westgate – Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure, Gauteng, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom, Environmental Scoping Study for the proposed new distribution line and substation, Dundonald, Mpumalanga, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 132kV powerline as well as a new substation in the Tarlton area of Gauteng. Also involved in the Public Participation Process.

Eskom Distribution, The proposed new 132 kV sub-transmission line between the Dinaledi and GaRankuwa substations for Eskom, GaRankuwa, Northwest, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom, Transmission Expansion of the Transmission powerline network and associated infrastructure between the Perseus substation and the Beta substation, Free State, South Africa

2008

Project Manager

This project involved the compilation of an alignment specific construction Environmental Management Plan for the 13km 765kV Perseus Beta Turn-ins.

Eskom Distribution – Central Region, Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure, Gauteng, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

**Eskom Distribution – Central Regio, Basic Assessment for the proposed Watershed – Mmabatho 88kV Power line. Northwest, South Africa
2008**

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan.

**Eskom Distribution – Central Region, Proposed Watershed – Mmabatho 88kV Power line. Northwest, South Africa
2007**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

**Eskom Holdings SOC Limited, Proposed Combined Cycle Gas Turbine Plant and Associated Infrastructure near Majuba, Mpumalanga, South Africa
2007**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

**Eskom Generation, Proposed Capacity Increase of the Atlantis OCGT Plant and Associated Infrastructure, Western Cape, South Africa
2006**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

**Eskom Holdings SOC Limited, Proposed Concentrated Solar Thermal Plant in the Northern Cape, South Africa
2006**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

**Eskom Holdings SOC Limited, Proposed Underground Coal Gasification plant, Eskom, Mpumalanga, South Africa
2006**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

**Eskom Generation, Proposed new Coal-fired Power Station in the Lephalale Area for Eskom, Limpopo, South Africa
2005**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

**Eskom Generation, Proposed Open Cycle. Gas Turbine Power Station at Atlantis for Eskom, Western Cape, South Africa
2005**

Environmental Consultant

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Infrastructure Sector



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

**Sasol South Africa Limited, Boegoebaai Green Hydrogen Project, Northern Cape, South Africa
2022-2023**

Project Manager

This project involved the compilation of an High level Environmental Screening for the Project, in preparation future Environmental Impact Assessment Processes

**Enertrag, Hendrina Green Hydrogen and Ammonia Facility, Mpumalanga, South Africa
2022-2023**

Project Director

This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme

**Enertrag, Camden Green Hydrogen and Ammonia Facility, Mpumalanga, South Africa
2021-2023**

Project Director

This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme

**Anglo American, Emalahleni Water Treatment Plant Amendment Project (EWRP), Emalahleni, Mpumalanga, South Africa.
2020**

Project Manager

Compilation of a Part 1 Amendment Process for the changes to the EWRP Environmental Authorisation as well as an update of the Environmental Management Programme.

**Eskom Holdings SOC Limited, Hendrina Leachate Dam, South Africa
2018**

Project Manager

This project involves the compilation of a Basic Assessment and Environmental Management Plan for a leachate Dam at the Domestic Waste Landfill Site at the Hendrina Power Station.

**SANRAL, Rehabilitation of the R34 between Vryburg and Schweizer-Reneke, Vryburg and Schweizer-Reneke, Northwest, South Africa
2016**

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan.

**Envirocin Incineration Systems CC, Proposed Expansion of the Cremation Facilities at the Envirocin Pet Crematorium, Kyasands, Gauteng, South Africa
2013**

Project Manager

This project involves the compilation of a basic assessment for the expansion of the cremation facilities.

**Industrial Development Corporation of SA (Pty) Ltd, Proposed Kraft Paper Mill in Frankfort, Frankfort, Free State, South Africa
2013**

Project Manager

This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme.

**SANRAL, Rehabilitation of the N14 between Delerayville and Sannieshof, Northwest, South Africa
2011**

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan as well as the construction of a new bridge over the Hartsriver. This project also included the compilation of Water Use License and Mining Permit Applications.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

**Makhado Municipality, Proposed new Waterfall Cemetery, Limpopo, South Africa
2011**

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan.

**Johannesburg Roads Agency, Route determination of the proposed Metro Boulevard, Weltevreden Park Area, Gauteng, South Africa
2008**

Project Manager

This project involved the undertaking of an Environmental Impact Assessment.

**Eskom Generation, Proposed new fuel supply pipeline between Milnerton and Atlantis, Western Cape, South Africa
2007**

Project Manager

This project involved undertaking an Environmental Impact Assessment for the proposed new fuel supply pipeline between Milnerton and Atlantis to supply the Ankerlig Power Station.

Mining Sector

**Rietvlei Mining Company, Establishment of the Proposed Rietvlei Opencast Coal Mine, Middelburg, Mpumalanga, South Africa
2013**

Project Manager

This project involves the undertaking of an integrated environmental authorisation process, including an Environmental Impact Assessment, Environmental Management Programme Report, Waste Management License Application and Water Use License Application.

**AngloGold Ashanti, Decommissioning of Redundant Infrastructure at the Vaal River Operations, Northwest and Free State, South Africa
2013**

Project Manager

This project involves undertaking an integrated Environmental Authorisation and Waste Management License process for the proposed decommissioning of redundant infrastructure.

**AngloGold Ashanti (Pty) Ltd, Decommissioning of Redundant Infrastructure at the West Wits Operations, Gauteng, South Africa
2013**

Project Manager

This project involves undertaking a Basic Assessment process for the proposed decommissioning of redundant infrastructure.

**Exxaro Coal (Pty) Ltd Inyanda Mine Pegasus South Expansion, Middelburg, Mpumalanga, South Africa
2011**

Project Manager

This project included the compilation of an Environmental Impact Assessment, Environmental Management Plan, the Amendment of the existing Environmental Management Programme Report and the amendment of the existing Water Use License.

**Sishen Iron Ore (Pty) Ltd, Sishen Infrastructure Program, Northern Cape, South Africa
2010**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and an Environmental Management Plan for the infrastructure expansion programme.

Sound Mining Solutions, Prospecting Permit Applications in the Kuruman area of the Northern Cape, South Africa



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

2011

Project Manager

This project involved the compilation of Environmental Management plans as part of six applications for Prospecting Permits.

Limpopo Department of Roads and Transport, Borrow pits required by the Limpopo Department of Roads and Transport, Limpopo, South Africa

2010

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits required for the rehabilitation of provincial roads.

Eskom Generation, Borrow pits required for the Medupi Coal Fired Power Station, Limpopo, South Africa

2008

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits.

Eskom Generation. Borrow pits required for the Ingula Pumped Storage Scheme, KwaZulu-Natal, South Africa

2008

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits.

Eskom Generation Project Manager, Mining Right Application for a 23 Hectare Borrow Pit required for the Steelpoort Pumped Storage Scheme, Mpumalanga, South Africa

2007

Project Manager

This project entailed the compilation of the required Environmental Management Programme Report in support of a Mining Right Application.

Minexpo, Renewed Mining and Prospecting Activities on the farm Quaggaskop 215, Vanrhynsdorp, Western Cape, South Africa

2004

Environmental Consultant

This project involved the compilation of an Environmental Management Programme Report for the recommencement of mining and prospecting activities.

Waste Management

Sasol Secunda Operations, Sasol Waste Management Environmental Management Programme, Secunda, South Africa

2019

Project Manager

Compilation of an operational Environmental Management Programme for the Sasol Waste Ash Facility, Charlie 1 Disposal Facility and the Waste Recycling Facility.

Eskom Holdings SOC Limited, Proposed continuous Ashing at Majuba Power Station, Mpumalanga, South Africa

2012

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Majuba Power Station in Mpumalanga.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Eskom Holdings SOC Limited, Proposed continuous Ashing at Tutuka Power Station, Mpumalanga, South Africa
2012

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Tutuka Power Station in Mpumalanga.

Hendrina Power Station, Proposed extension of Ash Dams at Hendrina Power Station, Mpumalanga, South Africa
2011

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed extension of the ash dams at the Hendrina Power Station in Mpumalanga.

Coega Development Corporation, Phase 1 of the Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility, Eastern Cape
2005

Project Manager

This project entailed the compilation Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility in the Eastern Cape.

Auditing

Sasol Chemical Industries, Secunda Synfuels Operations Waste Management License Audits for the Sasol Secunda, Mpumalanga, South Africa
2014 – 2021

Lead Auditor

These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities

South 32. Compliance Audits at South 32, Mpumalanga, South Africa
2016 – 2020

Project Manager

This project involved the environmental compliance audits of the Water Use Licenses for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga.

South 32, Compliance Audits at Middelburg Water Reclamation Plant (MWRP), Mpumalanga, South Africa
2016 – 2020

Project Manager

This project involved the environmental compliance audits of the Water Use License and Waste Management License for the MWRP at South 32 in Mpumalanga.

Nedbank, BioTherm Round 4 Lenders Technical Advisor, South Africa
2018 – 2021

Project Manager – Environmental

Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards.

Eskom Holdings SOC Limited, Water Use Licence Audits, Delmas, Mpumalanga, South Africa
2019

Lead Auditor

External compliance audits of the water use licences for the Delmas and Argent Powerlines in Mpumalanga.

Sasol Oil (Pty) Ltd, Sasol Alrode and Pretoria West Depot Audits, Pretoria, South Africa
2016 – 2020
Lead Auditor



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Environmental compliance audits for environmental authorisations and environmental management plans for the Sasol Alrode and Pretoria West Depots.

Sasol Oil (Pty) Ltd, Sasol Regulation 34 Audits, South Africa

2019

Lead Auditor

Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations.

Anglo American Platinum. Regulation 34 Audits at Mogalakwena Mine, Limpopo Province, South Africa

2019

Project Manager

Environmental compliance audits of the EMPR and various environmental authorisations at the Mogalakwena Mine.

Sasol Secunda Operations, Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations, Secunda, South Africa

2019

Lead Auditor

Environmental compliance audits for 49 authorisations for the Sasol Secunda.

Palabora Company, Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa

2019

Project Manager

Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine.

Sasol Mining, Water Use Licence Compliance, Secunda, South Africa

2018

Project Manager

Environmental compliance audit of six WULs held by mining operations.

South 32, Legal Assessment at South 32, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga, South Africa

2019

Project Manager and Lead Auditor

This project involved the assessment of legal compliance against the mine's legal register.

Investchem (Pty) Ltd, InvestChem Annual Environmental Compliance Monitoring, Kempton Park, Gauteng, South Africa

2013 – 2019

Lead Auditor

This project involved the annual environmental compliance auditing for InvestChem's Sulphonation Plant. The monitoring included InvestChem's compliance to various commitments contained in their environmental management programmes and conditions within their environmental authorisations (records of decision).

Sasol Oil (Pty) Ltd, Compliance Audits at Sasol Alrode and Pretoria West Depots, Gauteng, South Africa

2015 – 2019

Project Manager and Lead Auditor

Annual Environmental compliance auditing of the Environmental authorisations at the Alrode and Pretoria West Depots in Gauteng.

Eskom Holdings, Water Use Licence for the Letabo Power Station, Free State, South Africa

2018

Project Manager



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Environmental compliance audit of the WUL held by Eskom Letabo Power Station.

**Seriti Coal, Compliance Audits at Kriel Colliery, Kriel, Mpumalanga, South Africa
2018**

Project Manager

This project involved the environmental compliance audits of the Water Use Licenses.

**South 32, Legal Assessment at South 32, Mpumalanga, South Africa
2017**

Project Manager and Lead Auditor

This project involved the assessment of legal compliance against the mine's legal register for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections.

**South 32, EMPR Performance Assessment Report at South 32, Mpumalanga, South Africa
2016**

Project Manager

This project involved the formal assessment and verification of the Environmental Management Programme Report for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections.

**ACWA Power, Solafrica Bokpoort CSP Power Plant (Pty) Ltd. Compliance Audit for the Bokpoort Concentrating Solar Power (CSP) Facility, Groblershoop, Northern Cape, South Africa
2016**

Lead Auditor

This project involved the environmental compliance auditing of the Waste Management License, Environmental Authorisation and Water Use License.

**Anglo Thermal Coal, EMPR Performance Assessment Report for the Landau Colliery, Mpumalanga, South Africa
2013**

Auditor

This project involved the formal assessment and verification of the Landau Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002).

**AfriSam Southern Africa (Pty) Ltd, Waste Management License Audit for the Slagment Operation, Vanderbijlpark, Gauteng, South Africa
2013**

Lead Auditor

This project involved the annual environmental compliance auditing for AfriSam's Slagment Operation in Vanderbijlpark in Gauteng Province. The audit included AfriSam's compliance to the conditions of their waste management license.

**Anglo American Thermal Coal, EMPR Performance Assessment Report for the New Vaal Colliery, Free State, South Africa
2006 – 2007**

Auditor

This project involved the formal assessment and verification of the New Vaal Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002).

Environmental Control

**Wood South Africa (on behalf of Sasol South Africa Limited), Clean Fuels Projects (EHN & MFO, Large Tanks) Project, Secunda
2022-2024
Project Director**

Ashlea Strong

Environmental Planning & Advisory, Principal Associate

This project involved the monthly auditing of the contractor's compliance with the conditions of the environmental authorisation and environmental management plan for the Sasol Clean Fuels Projects in Secunda.

SANRAL.N14, rehabilitation between Sannieshof and Delareyville, Northwest, South Africa 2012

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer and SANRAL.

Victor Khanye Municipality. Delmas and Bontleng Wastewater Treatment Works, Mpumalanga, South Africa 2009

Environmental Control Officer

This project involved a once off compliance audit of the above-mentioned Wastewater Treatment Works.

Mkhondo Local Municipality. Nkonjaneni Water Borne Sewer Project in Piet Retief, Mpumalanga, South Africa 2009

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer.

ERWAT, Upgrading of the Waterval Water Care Works, Gauteng, South Africa 2005 – 2007

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan.

City of Tshwane Lotus Gardens, Ext 2 Township establishment, Gauteng, South Africa 2003

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan.

Training

SANRAL, N14 rehabilitation between Sannieshof and Delareyville, Northwest, South Africa 2012

Project Manager

This project involved the provision of training for the staff of the N14 rehabilitation project with regards to the contents of the environmental management plan.

Mintek, Training in Environmental Aspects and Rehabilitation for the Small-Scale Mining Division of Mintek, City, Province, South Africa 2004

Trainer

This project involved the provision of environmental awareness training for delegates involved in the small-scale miner training programme run by the Mintek small scale mining division.

Transwerk, Training in Environmental Aspects and Impacts, Germiston, Gauteng, South Africa 2004

Trainer

This project involved the provision of environmental aspects and impacts training for the staff of Transwerk in Germiston.

**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2015/1005

Herewith certifies that

Ashlea Strong

is registered as an

Environmental Assessment Practitioner

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

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

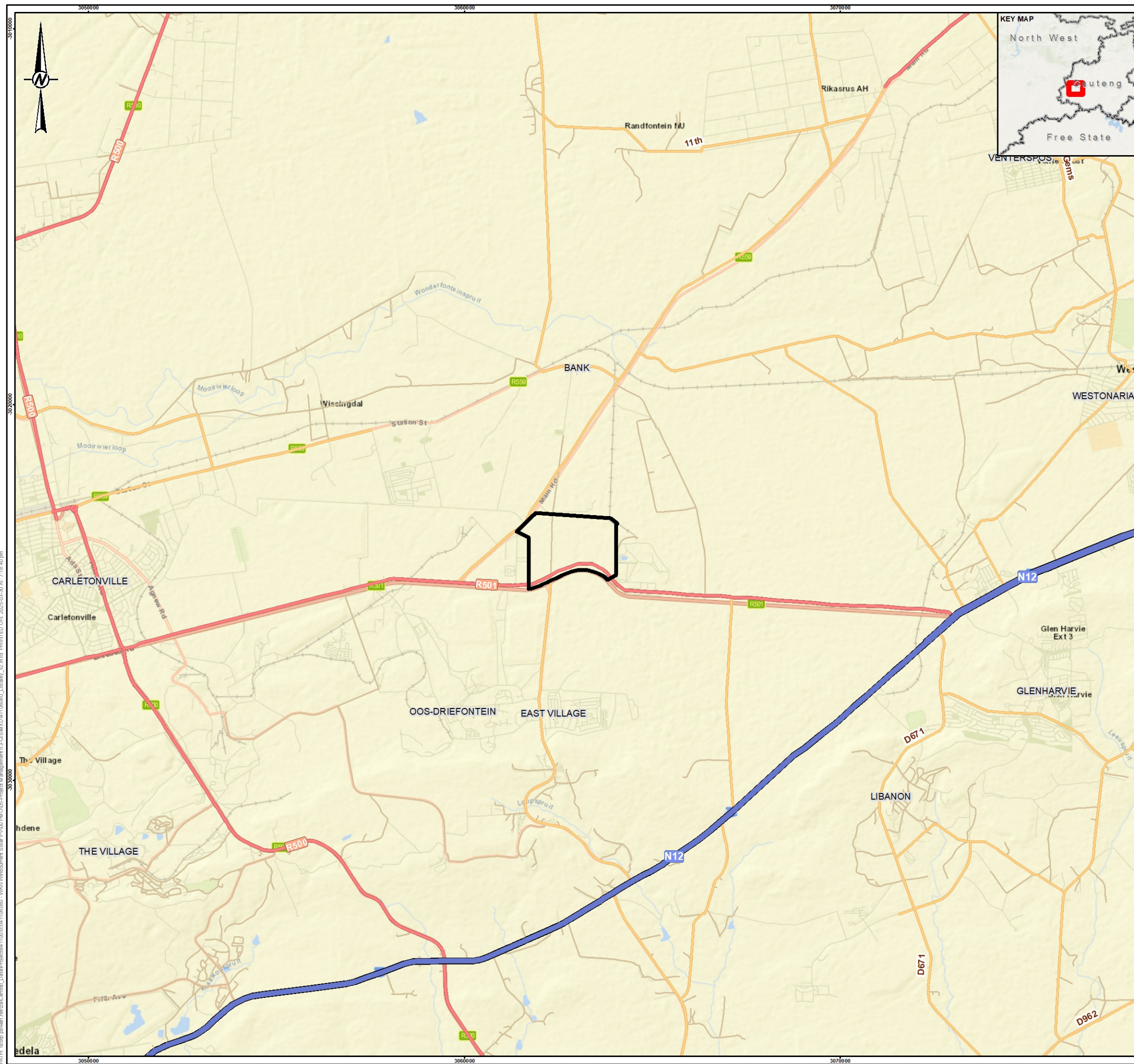
Registrar








Appendix B

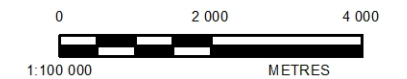
MAPS





LEGEND

-  Merafong land parcel
 National road
 Main road
 Secondary road
 Access road



NOTE(S)

REFERENCE(S)

1. COORDINATE SYSTEM: WGS 1984 WORLD MERCATOR
2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP,
INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI

CLIENT

MERAFONG ENERGY (PTY) LTD

PROJECT

PROJECT
MERA FONG SOLAR PV

TITLE

LOCALITY

CONSULTANT

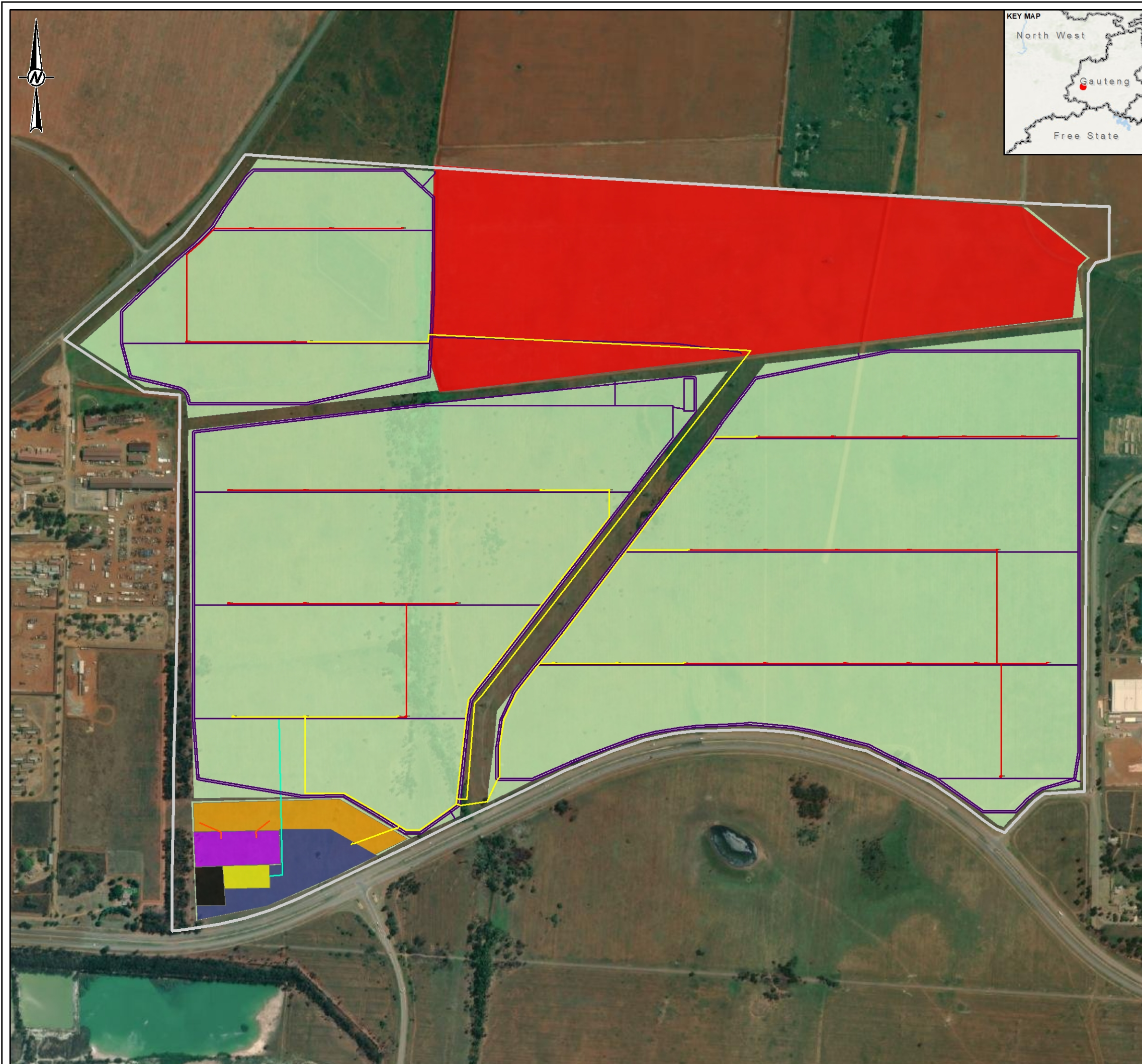
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PROJECT NO.
41106080

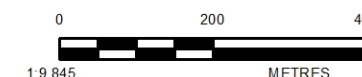
CONTROL

REV.

FIGURE



- LEGEND**
- Cables MV system 300 mm²
 - Cables MV system 630 mm²
 - Roads
 - HV Line
 - MV Cable Option 1
 - ▭ Merafong PV Development Area
 - ▭ Available area
 - ▭ Eskom Switching Station
 - ▭ Grid connection (LILO)
 - ▭ IPP Substation
 - ▭ Laydown area
 - ▭ Merafong PV LILO POC
 - ▭ Offices O&M
 - ▭ Power Stations
 - ▭ RA



NOTE(S)

REFERENCE(S)

1. COORDINATE SYSTEM: WGS 1984 WORLD MERCATOR
2. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

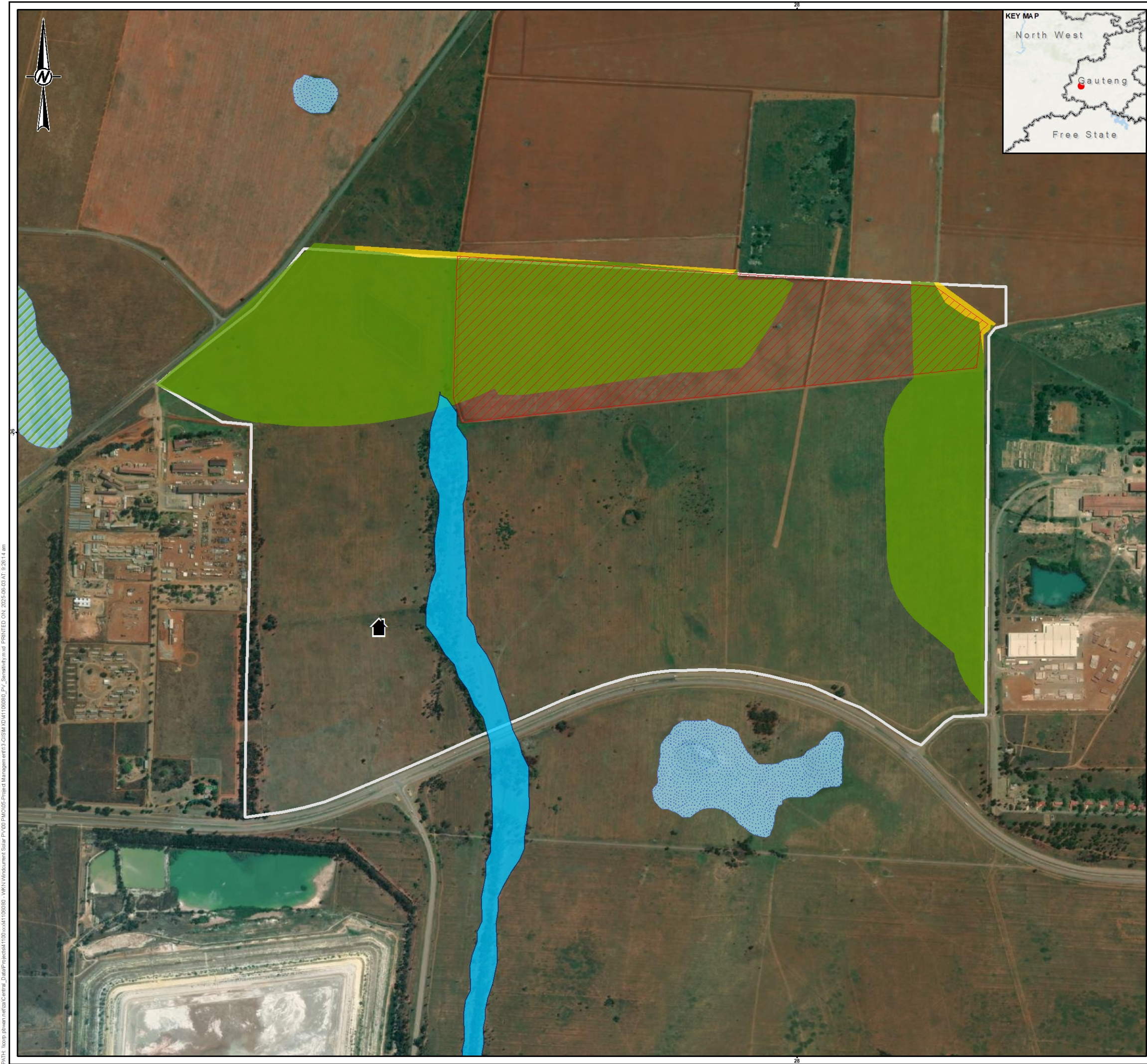
CLIENT
MERA FONG ENERGY (PTY) LTD

PROJECT
MERA FONG SOLAR PV

TITLE
STUDY AREA

CONSULTANT 	YYYY-MM-DD	2025/03/30
	DESIGNED	
	PREPARED	KM
	REVIEWED	AZ
	APPROVED	AS

PROJECT NO.	CONTROL	REV.	FIGURE
41106080			



- LEGEND
- Merafong PV Development Area
 - Heritage
 - High Agriculture Sensitivity
 - CBA
 - ESA
 - Wetland
 - Pan
 - Artificial Drainage




NOTE(S)

REFERENCE(S)
1. COORDINATE SYSTEM: GCS WGS 1984
2. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
MERAFONG ENERGY (PTY) LTD

PROJECT
MERAFONG SOLAR PV

TITLE
PV SENSITIVITY MAP

	CONSULTANT	YYYY-MM-DD	2025/06/03
	DESIGNED		
	PREPARED	KM	
	REVIEWED	AZ	
	APPROVED	AS	

PROJECT NO.	CONTROL	REV.	FIGURE
41106080			

PATH: \\wsp-pbsew-nv\Central_Data\Projects\41106080 - Merafong Solar PV\000-PMO\05-Project Manager\enr\13-GIS\WXM\106080_PV_Sensitivity.mxd PRINTED ON: 2025-06-03 AT: 9:26:14 am

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3



Building 1, Maxwell Office Park
Magwa Crescent West, Waterfall City
Midrand, 1685
South Africa

wsp.com

PUBLIC