



Mura 1 (Pty) Ltd

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# MURA 1 SOLAR PHOTOVOLTAIC FACILITY

Draft Environmental Management Programme





Mura 1 (Pty) Ltd

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# MURA 1 SOLAR PHOTOVOLTAIC FACILITY

## Draft Environmental Management Programme

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SUBSTATION GENERIC EMPR

# GLOSSARY

Abbreviation	Definition
AEL	Atmospheric Emissions License
AIS	Alien and Invasive Species
ATNS	Air Traffic and Navigation Services
BA	Basic Assessment
BAR	Basic Assessment Report
BWLM	Beaufort West Local Municipality
BESS	Battery Energy Storage System
BMS	Battery Management System
CA	Competent authority
CARA	Conservation of Agricultural Resources Act (No. 43 of 1983)
CBA	Critical Biodiversity Area
CKDM	Central Karoo District Municipality
CCIA	Climate Change Impact Assessment
DC	Direct current
DFFE	Department of Forestry, Fisheries and Environment
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act 73 of 1989
ECO	Environmental Control Officer
EGI	Electrical Grid Infrastructure
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EO	Environmental Officer



<b>Abbreviation</b>	<b>Definition</b>
EP	Equator Principles
EPC	Engineering, Procurement and Construction
EPFI	Equator Principles Financial Institutions
ERA	Electricity Regulation Act (No. 4 of 2006)
ERP	Emergency Response Plan
FI	Financial institutions
GA	General Authorisation
GHG	Greenhouse gas
GIIP	Good international industry practice
GNR	Government Notice Regulation
ha	Hectares
HWC	Heritage Western Cape
IBA	Important Bird & Biodiversity Area
ICAO	International Civil Aviation Organisation
IEP	National Integrated Energy Plan
IFC	International Finance Corporation
IRP	Integrated Resource Plan
KNP	Karoo National Park
LSA	Late Stone Ages
LUPA	Land Use Planning Act (Act 3 of 2014)
MR	Main roads
Mura 1	Mura 1 (Pty) Ltd
MSDS	Material Safety Data Sheet
NDP	National Development Plan
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act 39 of 2004
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)





<b>Abbreviation</b>	<b>Definition</b>
NEMPAA	National Environmental Management Protected Areas Act (No. 57 of 2003)
NHRA	National Heritage Resource Act (Act No. 25 of 1999)
NID	Notification of Intent to Develop
NPAES	National Protected Area Expansion Strategy 2010
NR	National Routes
NWA	National Water Act, 1998 (Act No. 36 of 1998)
O&M	Operational and maintenance
OHSA	Occupational Health and Safety Act (No. 85 of 1993)
PS	Performance Standards
PSDF	Provincial Spatial Development Framework, 2014
PV	Photovoltaic
REC	Recommended ecological condition
REDZ	Renewable Energy Development Zones
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RFI	Radio Frequency Interference
S&EIA	Scoping and EIA
SABS	South African Bureau of Standards
SACAA	South African Civil Aviation Authority
SAHRA	South African Heritage Resources Agency
SAHRA	South African Heritage Resources Agency
SALA	Subdivision of Agricultural Land Act
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency
SANS	South African National Standards
SARPs	Standards and Recommended Practices
SAWS	South African Weather Service
SDF	Spatial Development Frameworks



<b>Abbreviation</b>	<b>Definition</b>
SDG	Sustainable Development Goals
SEF	Solar Energy Facilities
SER	Stakeholder Engagement Report
SG	Surveyor General
SHERQ	Safety Health Environment Risk & Quality
SPLUMA	Spatial Planning and Land Use Management Act (Act 16 of 2013 )
SWMP	Stormwater Management Plan
TOPs	Threatened or Protected Species
TR	Trunk roads
UNDP	United Nations' Development Programmes
WBG	World Bank Group
WCIF	Western Cape Infrastructure Framework
WEF	Wind Energy Facilities
WMP	Waste Management Plan
WSP	WSP Group Africa (Pty) Ltd
WUA	Water Use Authorisation
WUL	Water Use License

# 1 INTRODUCTION

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WSP Group Africa (Pty) Ltd (WSP) has been appointed by Mura 1 (Pty) Ltd (Mura 1), to undertake an Environmental Impact Assessment (EIA) to meet the requirements under the National Environmental Management Act (Act 107 of 1998) (NEMA), for the proposed Mura 1 Solar Photovoltaic (PV) Facility between Loxton and Beaufort West in the Beaufort West Local Municipality (BWLM) and the Central Karoo District Municipality (CKDM) (**Figure 1-1** and **Figure 1-2**).

The proposed Mura 1 Solar PV Facility falls within the Beaufort West Renewable Energy Development Zones (REDZ) and will therefore be subject to a Basic Assessment (BA) Process in terms of NEMA (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017. The competent authority (CA) for this BA process is the national Department of Forestry, Fisheries and Environment (DFFE).

In order for the proposed project to proceed, it will require an Environmental Authorisation (EA) from the DFFE. This Environmental Management Programme (EMPr) is for the proposed Mura 1 Solar PV Facility and was compiled as part of the BA process and must be read in conjunction with the Draft BA Report in support of the EA application.

## 1.1 BACKGROUND INFORMATION

Red Cap Energy is proposing to develop four solar facilities, namely Mura 1, Mura 2, Mura 3, and Mura 4, and an associated grid connection, collectively known as the Mura PV Development between Loxton and Beaufort West. The proposed Mura PV Development is located in close proximity to the approved Nuweveld Wind Farm Development. The Mura PV Development falls partially within the Beaufort West REDZ. The Mura 1 Solar PV Facility falls within the Beaufort West REDZ and as per GN 142 is therefore subject to an expedited Basic Assessment (BA) Process in terms of NEMA (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017. Mura 2, 3 and 4 fall partially or fully outside of the REDZ and therefore subject to a full Scoping and EIA (S&EIA) process in terms of NEMA (as amended) and Appendix 2 and 3 of the of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017.

Each solar facility will connect to the Eskom grid via new 132 kV overhead lines (assessed in a separate process to the PV facilities) connecting up to two on-site solar substations via adjacent Eskom switching stations to the approved Nuweveld Collector Substation.

For the grid connection, an Electrical Grid Infrastructure (EGI) Corridor is proposed and is assessed as a separate project. The grid line is arranged in what is called a "collector ring line". This implies that it is a circular grid line and not just a single line between the Nuweveld Collector Substation and the Mura facilities. The use of a circular "collector ring line" is an approach used by Eskom and others to improve the grid stability and to ensure that if the grid line is damaged on one side of the "collector ring line", that the solar facilities can still export their energy along the other side of the ring line while the fault is repaired. This allows these facilities to be better integrated into the national grid and to better reduce risks of downtime which enables these solar facility projects to be better



adapted to potential amendments to future bidding requirements or to potentially give them a competitive advantage over other similar projects.

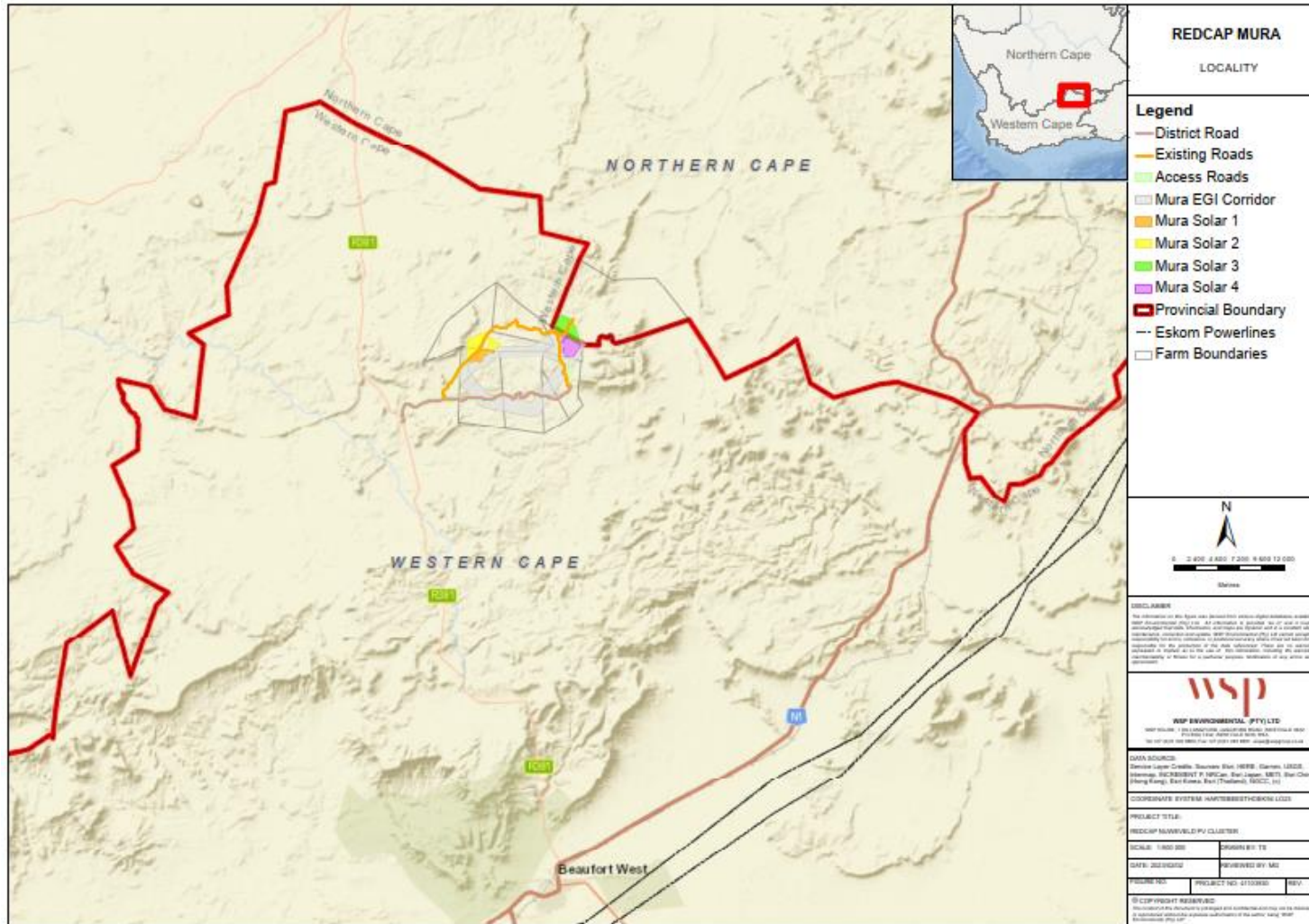
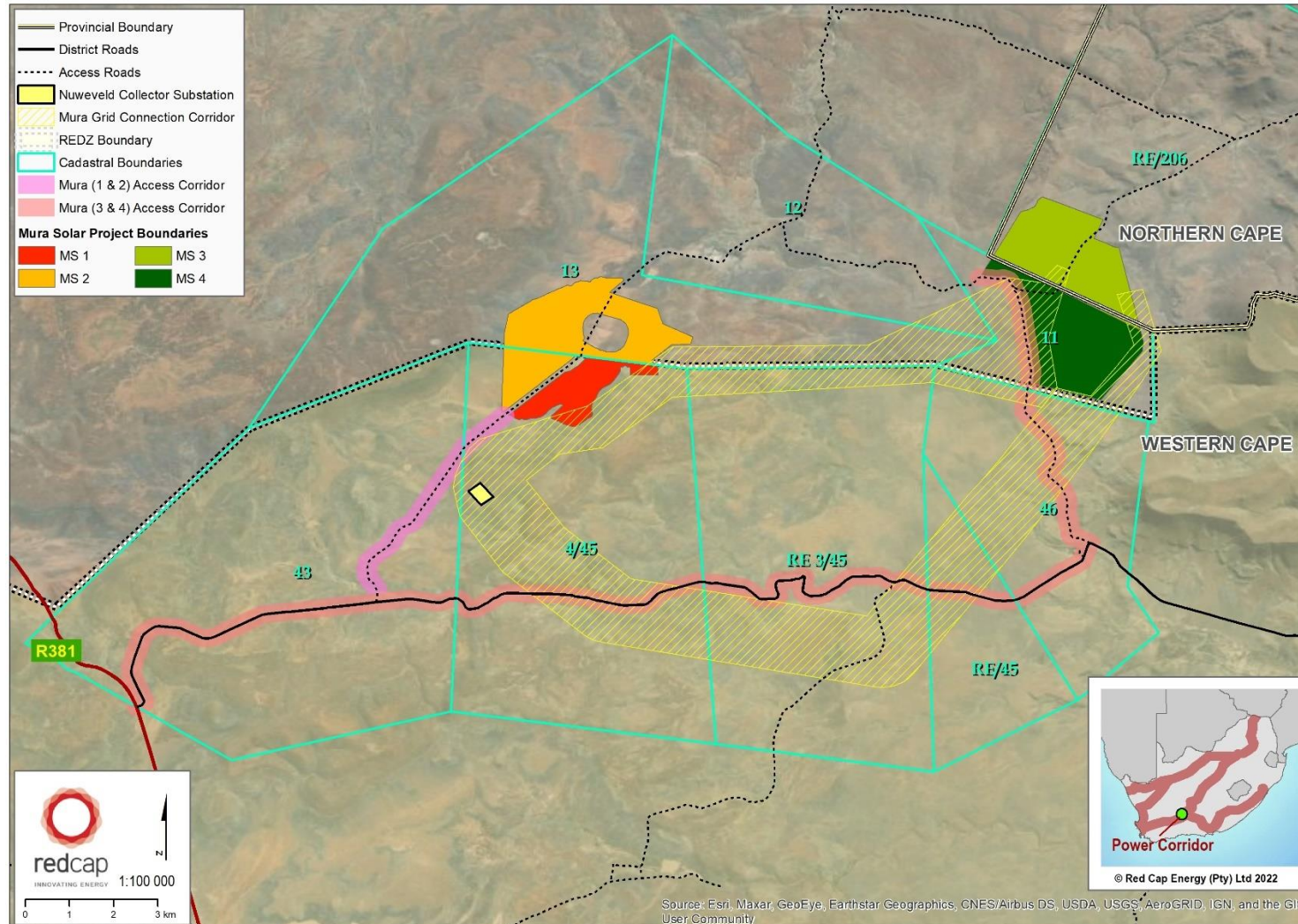


Figure 1-1 – Regional locality map of Mura Solar PV Development





**Figure 1-2 – Locality map of Mura Solar PV Development being assessed in the formal environmental impact assessment process**



## 1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP was appointed in the role of Independent Environmental Assessment Practitioner (EAP) to undertake the BA process for the proposed project. The CV of the EAP is available in **Appendix A**. The EAP declaration of interest and undertaking is included in **Appendix B. Table 1-1** details the relevant contact details of the EAP.

**Table 1-1 – Details of the EAP**

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

## 1.3 PURPOSE OF THE EMPR

An 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 projects 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 Mura 1 Solar PV Facility.

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 BA process.

### 1.3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, Mura 1 Solar PV Facility 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	<b>Section 1.2</b>
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	<b>Section 1.2 Appendix A</b>
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	<b>Section 2.2</b>
(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;	<b>Section 3 Appendix C</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-	<b>Section 3.2 and Section 6</b>
	(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 -	<b>Section 6</b>
	(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
	(ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	
(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- (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	Section 5.2
(n)	any specific information that may be required by the competent authority	N/A

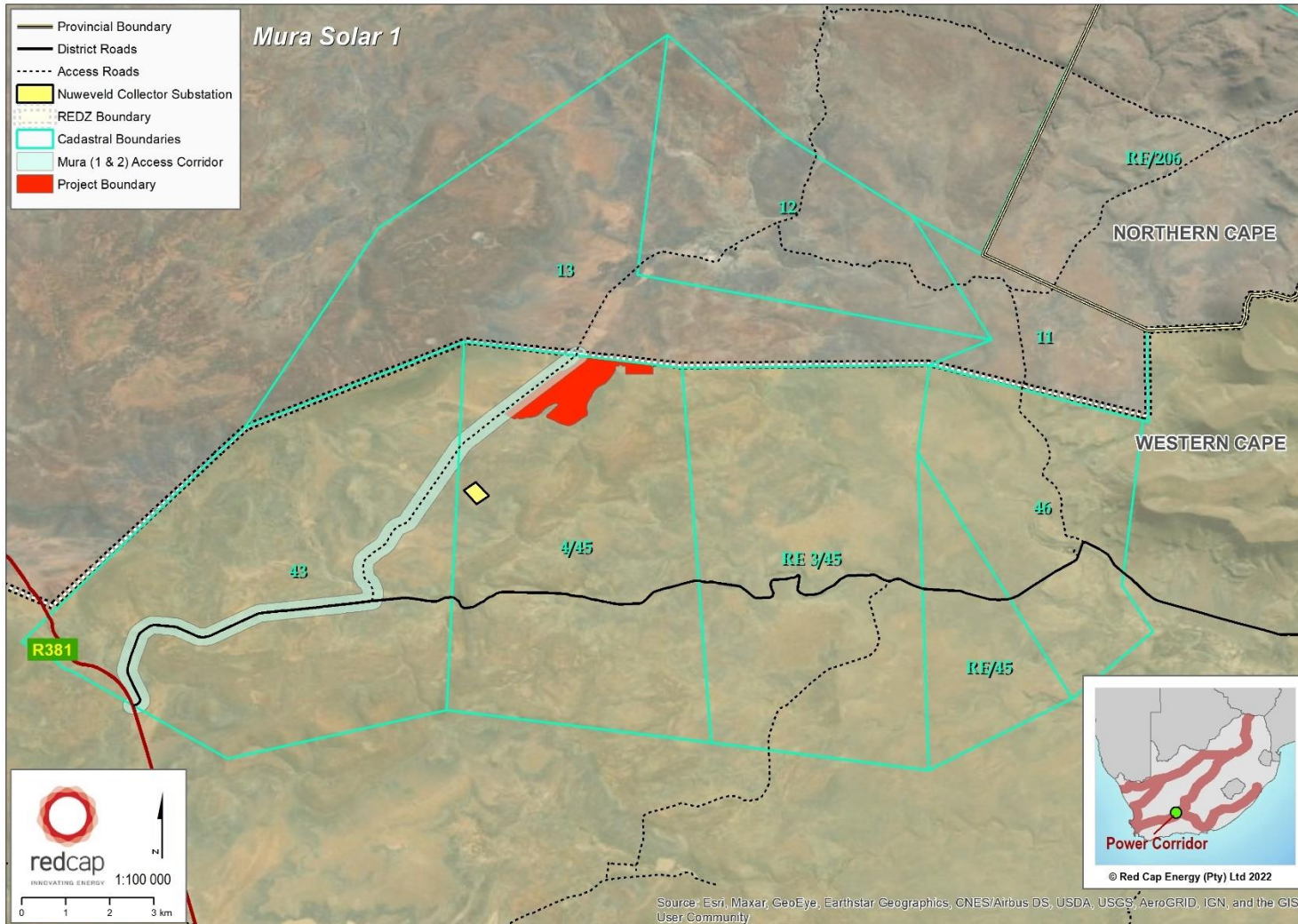
## 2 PROJECT DESCRIPTION

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This section provides a description of the location of the project site location 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 needs and desirability of the project in accordance with Appendix 3 of GNR 326.

### 2.1 LOCATION OF THE PROPOSED PROJECT

The proposed Mura 1 Solar PV Facility which includes its access road is located between Loxton and Beaufort West in the BWLM and the CKDM in the Western Cape Province. The proposed Mura 1 Facility will be developed within a project area of approximately 176 hectares (ha), excluding the access road corridor. The site will be accessed via the R381, DR02317 and existing access roads (**Figure 2-1**). The details of the property associated with the proposed Mura 1 PV Facility, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 2-1**. The co-ordinates of the cadastral land parcels are included in **Table 2-2**. The coordinates of the centre and outer corner points of the development area of the Mura 1 Solar PV Facility are provided in **Table 2-3** and the access road corridor provided in **Table 2-4** below.



**Figure 2-1 – Mura 1 Solar PV Facility**



**Table 2-1 – Mura 1 Solar PV Facility Affected Farm Portions**

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
Leeuwkloof Farm 43	C00900000000004300000
Portion 4 of Duiker Kranse Farm 45	C00900000000004500004

**Table 2-2 – Coordinate Points of the Cadastral Land Parcel**

Point	Longitude	Latitude
AF	22° 25' 30.549" E	31° 54' 31.383" S
AG	22° 23' 38.105" E	31° 53' 27.670" S
AH	22° 23' 27.895" E	31° 53' 24.545" S

Point	Longitude	Latitude
AI	22° 22' 59.281" E	31° 53' 5.869" S
AJ	22° 23' 21.151" E	31° 52' 39.727" S
J	22° 25' 42.416" E	31° 50' 28.752" S
A	22° 28' 23.070" E	31° 49' 26.137" S
B	22° 31' 2.626" E	31° 49' 45.289" S
C	22° 31' 24.038" E	31° 54' 19.973" S
D	22° 28' 9.966" E	31° 53' 55.928" S

**Table 2-3 – Mura 1 Solar PV Facility Coordinates**

Point	Longitude	Latitude
<b>PV Development Area</b>		
Centre Point	22°29'35.79"E	31°50'20.38"S
1	22° 28' 52.540" E	31° 50' 19.187" S
2	22° 29' 0.200" E	31° 50' 22.819" S
3	22° 29' 3.638" E	31° 50' 22.916" S



Point	Longitude	Latitude
4	22° 29' 18.258" E	31° 50' 19.093" S
5	22° 29' 29.825" E	31° 50' 11.422" S
6	22° 29' 31.672" E	31° 50' 12.354" S
7	22° 29' 23.662" E	31° 50' 19.734" S
8	22° 29' 22.844" E	31° 50' 14.795" S
9	22° 29' 24.756" E	31° 50' 22.351" S
10	22° 29' 39.743" E	31° 50' 27.704" S
11	22° 29' 46.860" E	31° 50' 24.331" S
12	22° 29' 53.635" E	31° 50' 19.450" S
13	22° 29' 52.998" E	31° 50' 13.002" S
14	22° 29' 56.695" E	31° 50' 5.618" S
15	22° 30' 1.350" E	31° 49' 59.344" S
16	22° 30' 5.864" E	31° 49' 56.960" S
17	22° 30' 14.076" E	31° 49' 46.729" S
18	22° 30' 14.166" E	31° 49' 44.350" S
19	22° 30' 15.592" E	31° 49' 44.335" S
20	22° 30' 19.141" E	31° 49' 44.170" S
21	22° 30' 17.363" E	31° 49' 43.241" S
22	22° 30' 21.161" E	31° 49' 44.270" S
23	22° 30' 21.305" E	31° 49' 50.074" S
24	22° 30' 41.652" E	31° 49' 49.832" S
25	22° 30' 41.573" E	31° 49' 44.954" S
26	22° 30' 39.665" E	31° 49' 42.532" S
27	22° 29' 49.977" E	31° 49' 36.602" S
28	22° 29' 38.054" E	31° 49' 46.520" S
29	22° 29' 33.526" E	31° 49' 47.820" S

**Preliminary areas for substations, switching stations and BESS**



Point	Longitude	Latitude
Centre Point	31°50'17.24"S	22°29'2.13"E



**Table 2-4 – Mura 1 and 2 Access Road Coordinates**

Point	Longitude	Latitude
a (Start)	22° 24' 20.311" E	31° 53' 52.717" S
b (Middle)	22° 27' 15.092" E	31° 52' 36.273" S
c (End)	22° 29' 45.190" E	31° 49' 37.042" S





## 2.2 ACTIVITY DESCRIPTION

The following are proposed as part of the project. The total project area is 198 ha and should be assumed to be wholly transformed. The project footprint will contain the following:

- Solar Field;
- Solar Farm Substations;
- BESS and BESS substation;
- Building Infrastructure;
- Other Infrastructure located within the solar area footprint; and
- Associated Infrastructure (outside the solar area footprint).

These items are discussed in more detail below.

### 2.2.1 SOLAR FIELD

The total development envelope for project installation is approximately 176 ha to allow for the construction of a PV facility with capacity up to 150 MW. Solar PV modules which convert solar radiation directly into electricity, will have a maximum height of 6m. The solar PV modules will be elevated above the ground and will be located on either single axis tracking structures or fixed tilt mounting structures or similar.

### 2.2.2 SOLAR FARM SUBSTATIONS

Each solar facility will connect to the Eskom grid via new 132 kV overhead lines (assessed in separate processes to the PV facilities) connecting the up to two on-site solar substations via an adjacent Eskom switching stations to the approved Nuweveld Collector substation.

The substations will have a maximum height of 12m and will include a high voltage gantry within a 150 m x 75 m substation yard

### 2.2.3 BESS AND BESS SUBSTATION

Each solar farm will have an area up to 4 ha for a 240 Mwhac BESS. The BESS will be Lithium-ion or similar solid-state technology. The BESS will have a substation with the same specifications as the Solar Farm substations. The BESS will be connected to the solar farm sub/switching stations via an underground high voltage cable.

### 2.2.4 BUILDING INFRASTRUCTURE

Building infrastructure of up to a maximum height of 8m will be located within the project area. The infrastructure includes:

- Offices;
- Operational and maintenance (O&M)/ control centre;
- Warehouse/workshop;
- Ablution facilities; and
- Converter/inverter stations.

### 2.2.5 OTHER INFRASTRUCTURE

Other Infrastructure located within the solar area footprint includes:

- Internal underground cables of up to 132 kV;

- Internal gravel roads;
- Fencing (between 2 – 3 m high) around the PV Facility;
- Panel maintenance and cleaning area;
- Storm water management system; and
- Site camps.

## 2.2.6 ASSOCIATED INFRASTRUCTURE

There will be additional associated Infrastructure outside the solar area footprint but part of the solar project. This includes:

- Internal access gravel roads with a footprint of 17 ha:
  - Up to 4 m wide driving surface and may require side drains on one or both sides.
  - During construction the roads may be up to 12 m wide, but this will be a temporary impact and rehabilitated following the construction phase.
- Site camps:
  - Up to two 2.2 ha site camps within the access road corridor.

## 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 2-5**.

**Table 2-5 – Construction activities**

Activity	Description
Establishment of access and internal roads	Access to the proposed Mura 1 Solar PV facility will be via the R381, DR02317 and existing access roads. Internal gravel roads will be developed. The roads will be up to 4 m wide, but during construction the roads may be up to 12 m wide, however this will be a temporary impact and rehabilitated following the construction phase
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. Laydown areas (site camps) of approximately up to 2.2ha each have been proposed for this project. The laydown areas 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.

Activity	Description
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 the 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 6m.
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 within the facility to a common point before being fed to the onsite substation.
Establishment of ancillary infrastructure	Ancillary infrastructure will include a workshop, storage areas, office, and a temporary laydown area for contractor's equipment.
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, BESS, and other associated infrastructure.

### 2.3.3 DECOMMISSIONING PHASE

The proposed facility is expected to be operational for approximately 25 years. Should it be decided not to extend beyond the 25 years lifespan, the facility will be decommissioned. The decommissioning phase includes the activities associated with the removal/dismantling of the SEF and associated infrastructure when no longer necessary. This would entail returning the land to its pre-construction state. The decommissioning phase will include activities similar to that of the construction phase as indicated in **Table 2-5**.

### 3 ENVIRONMENTAL SENSITIVITY

#### 3.1 SENSITIVITY MAPPING AND DEVELOPMENT ENVELOPE

The Mura site boundary was assessed by the specialists as part of desktop assessments and subsequent fieldwork. The specialists provided their sensitivity layers indicating the various sensitivities present on site in line with the mapping criteria detailed below (**Table 3-1**).

**Table 3-1 – Mapping criteria utilised by the specialists for the assessment**

No-Go	Areas or features that are considered of such sensitivity or importance that any adverse effects upon them may be regarded as a fatal flaw.
High	Areas or features that are considered to have high sensitivity. Development in these areas must be limited and must remain within any acceptable limits of change as determined by the specialist. Development should also comply with any other restrictions or mitigation measures identified by the specialist.
Medium	Medium sensitivity areas are considered to be developable; however, the nature of the effects should remain within any acceptable limits of change as determined by the specialist. Development should also comply with any other restrictions or mitigation measures identified by the specialist.
Low	Low sensitivity areas that are considered to be developable however specialists may still wish to define acceptable limits of change should they deem this necessary.

The environmental sensitivities identified on site are included in **Table 3-2**. Utilising the sensitivity layers (which includes the required buffers) provided by the specialists, a preliminary consolidated environmental sensitivity map showing the “No-Go” areas (**Figure 3-1**) has been compiled. From this, the Development Envelope for the site has been determined. The Development Envelope avoids the no-go areas and adheres to the recommendations made by the specialists. The Development Envelope is shown in **Figure 3-2**.

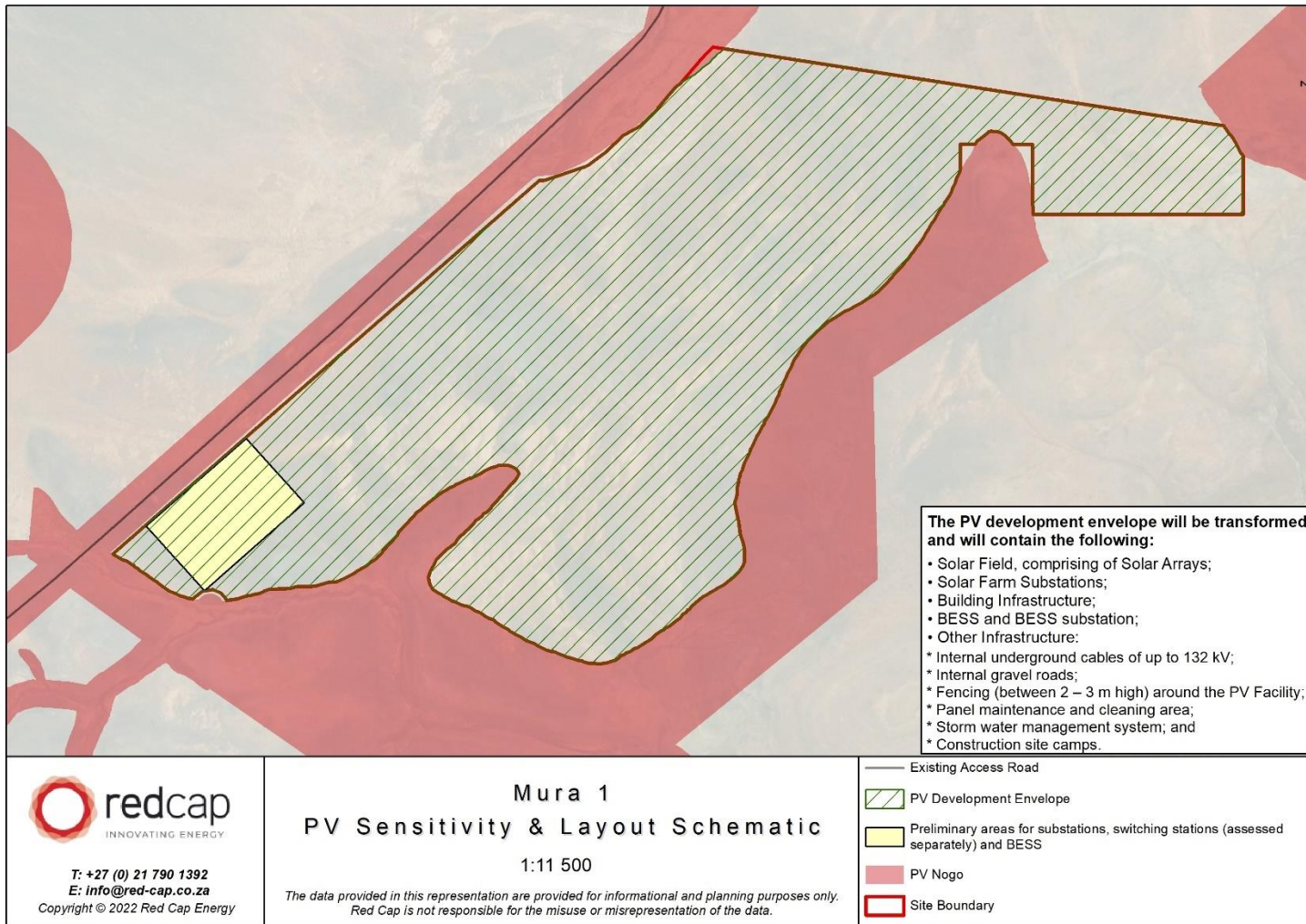
**Table 3-2 – Environmental Sensitivities identified by specialists**

Discipline	Infrastructure Type and Sensitivity Criteria		Exceptions
	Solar and associated infrastructure	New roads outside of the solar area	
Agriculture	<b>MEDIUM:</b> <ul style="list-style-type: none"> <li>■ Land capability Value of 6 – 8</li> </ul>	<b>MEDIUM:</b> <ul style="list-style-type: none"> <li>■ Land capability Value of 6 – 8</li> </ul>	
	<b>LOW:</b> <ul style="list-style-type: none"> <li>■ Land capability Value of 1 – 5</li> </ul>	<b>LOW:</b> <ul style="list-style-type: none"> <li>■ Land capability Value of 1 – 5</li> </ul>	

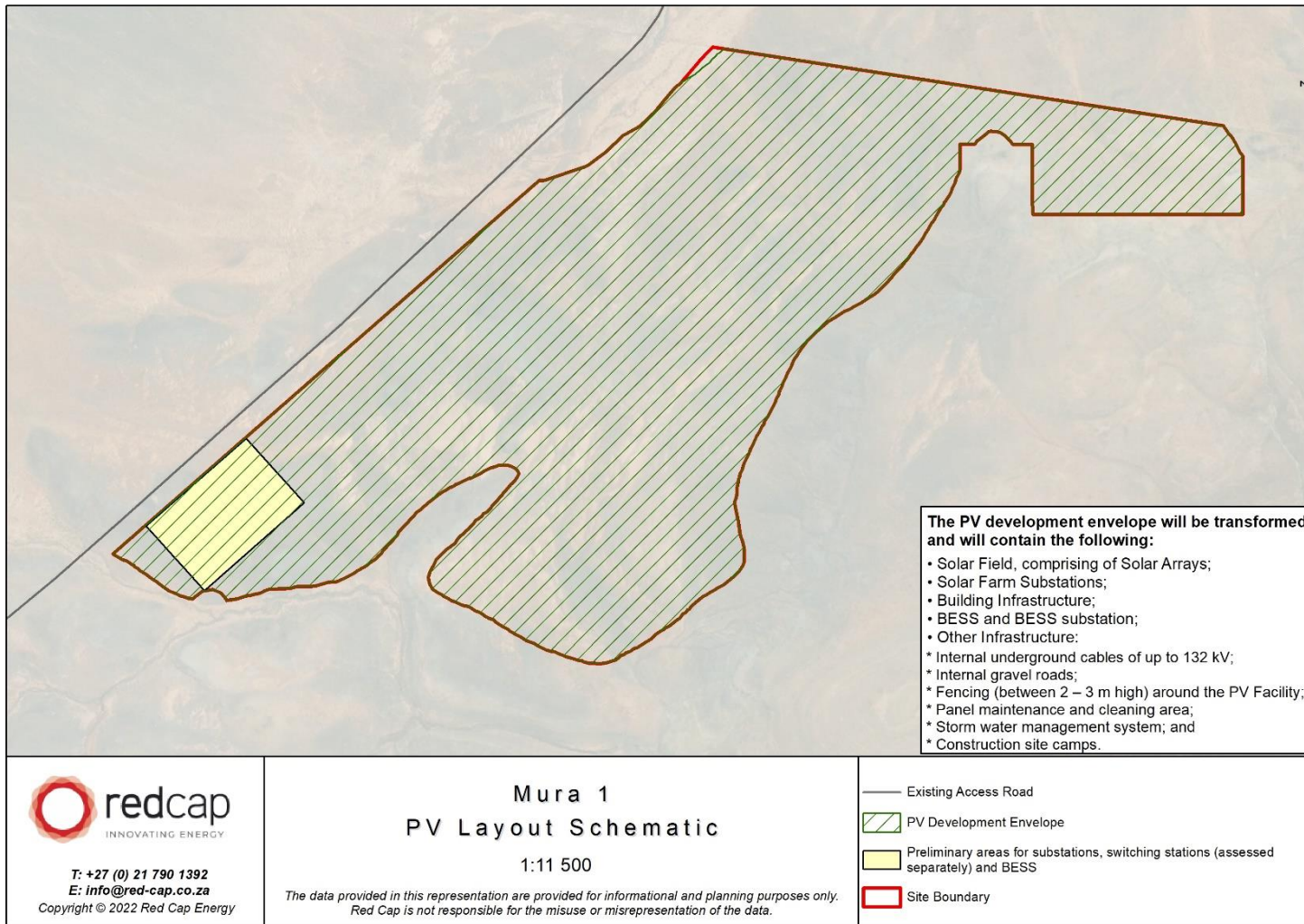
Aquatic Ecology	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ 35m buffer of the Krom Rivier and surrounding valley bottom and floodplains wetlands</li> <li>■ 35m buffer of small tributaries</li> <li>■ 35m buffer of valley bottom wetlands</li> </ul>	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ 35m buffer of the Krom Rivier and surrounding valley bottom and floodplains wetlands</li> <li>■ 35m buffer of small tributaries</li> <li>■ 35m buffer of valley bottom wetlands</li> </ul>	<p>Underground cables and limited-service tracks may be constructed through these features.</p> <p>The proposed widening of the access roads are along existing roads and the watercourse crossings can be adequately mitigated so that these aquatic ecosystems would not be a constraint to the required upgrade to the existing roads.</p>
Heritage	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ Grade IIIA features</li> </ul>	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ Grade IIIA features with 50 m buffer</li> </ul>	
	<p><b>HIGH:</b></p> <ul style="list-style-type: none"> <li>■ Grade IIIB features</li> </ul>	<p><b>HIGH:</b></p> <ul style="list-style-type: none"> <li>■ Grade IIIB features with 50 m buffer</li> </ul>	
	<p><b>MEDIUM:</b></p> <ul style="list-style-type: none"> <li>■ Grade IIIC/GPA/GPB features</li> </ul>	<p><b>MEDIUM:</b></p> <ul style="list-style-type: none"> <li>■ Grade IIIC/GPA/GPB features with 50 m buffer</li> </ul>	
Avifauna	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ 2km buffer around a Verreaux Eagle nest</li> <li>■ 250m buffer around dams</li> </ul>	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ 2km buffer around a Verreaux Eagle nest</li> <li>■ 250m buffer around dams</li> </ul>	<p>Use may be made of existing roads (which may be widened) within the no-go areas.</p>
Terrestrial Ecology	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ Optimal Riverine Rabbit Habitat</li> <li>■ Drainage lines</li> <li>■ Valleys</li> <li>■ Hills</li> </ul>	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ Optimal Riverine Rabbit Habitat</li> <li>■ Drainage lines</li> <li>■ Valleys</li> <li>■ Hills</li> </ul>	<p>The buffers do not apply to the widening of existing roads</p>
Visual	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ Topographic features within 100m</li> <li>■ Steep slopes &gt; 1:4</li> <li>■ River features</li> <li>■ Cultural landscapes and croplands within 250m</li> </ul>	<p><b>NO-GO:</b></p> <ul style="list-style-type: none"> <li>■ Topographic features within 100m</li> <li>■ Steep slopes &gt; 1:4</li> <li>■ Private reserves/guest farms</li> </ul>	<p>The sensitivity buffers do not apply to the widening of existing roads</p>

	<ul style="list-style-type: none"> <li>▪ Private reserves or guest farms and farmsteads outside the sites within 500m</li> <li>▪ Farmsteads inside the site within 250m</li> <li>▪ Scenic routes, ports, and passes within 750m</li> <li>▪ District roads within 100m</li> <li>▪ Minor roads within 50m</li> </ul>		
	<p>HIGH:</p> <ul style="list-style-type: none"> <li>▪ Topographic features within 250m</li> <li>▪ Steep slopes &gt; 1:10</li> <li>▪ River features within 500m</li> <li>▪ Private reserves or guest farms and farmsteads outside the sites within 1km</li> <li>▪ Cultural landscapes and croplands within 500m</li> <li>▪ Farmsteads inside the sites within 500m</li> <li>▪ Scenic routes, ports, and passes within 1km</li> <li>▪ District roads within 150m</li> <li>▪ Minor roads within 100m</li> </ul>	<p>HIGH:</p> <ul style="list-style-type: none"> <li>▪ Topographic features within 50m</li> <li>▪ Steep slopes &gt; 1:10</li> <li>▪ River features within 50m</li> <li>▪ Private reserves or guest farms within 250m</li> </ul>	
	<p>MEDIUM:</p> <ul style="list-style-type: none"> <li>▪ Limited viewshed of solar</li> <li>▪ Private reserves or guest farms and farmsteads outside the sites within 2km</li> <li>▪ Scenic routes, ports, and passes within 2km</li> <li>▪ District roads within 250m</li> <li>▪ Minor roads within 250m</li> </ul>	<p>MEDIUM:</p> <ul style="list-style-type: none"> <li>▪ River features within 100m</li> <li>▪ Cultural landscapes and cropland within 150m</li> <li>▪ Private reserves and guest farms within 350m</li> </ul>	





**Figure 3-1 – Combined No-Go Sensitivity Map and Proposed Development Envelope for Mura 1 PV Facility**



**Figure 3-2 – Proposed Development Envelope for Mura 1 PV Facility**

### 3.2 IMPACT ASSESSMENT OUTCOMES

A summary of the identified impacts and corresponding significance ratings for the proposed Mura 1 Solar PV Facility is provided in **Table 3-3** below.

**Table 3-3 – Impact Summary**

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
				Score	Significance	Score	Significance
Climate Change	Impact of project on climate change	O	(+)	85	Very High	N/A	
Aquatic Biodiversity	Decrease in habitat integrity	C	(-)	16	Low	10	Very Low
	Decrease in aquatic ecosystem integrity	C	(-)	16	Low	5	Very Low
	Stress on water resource	C	(-)	20	Low	12	Very Low
	Flow modification	C	(-)	12	Very Low	10	Very Low
	Decrease in aquatic ecosystem integrity	C	(-)	10	Very Low	10	Very Low
	Water quality impacts	C	(-)	6	Very Low	5	Very Low
	Aquatic ecosystem integrity	O	(-)	30	Low	14	Very Low
	Aquatic ecosystem integrity	O	(-)	27	Low	14	Very Low
	Stress on water resource	O	(-)	14	Very Low	14	Very Low
	Flow/hydraulic modification	O	(-)	16	Low	5	Very Low
	Loss of aquatic habitat and biota	D	(-)	12	Very Low	5	Very Low
	Aquatic ecosystem integrity	D	(-)	12	Very Low	5	Very Low
Avifauna	Destruction of habitat	C	(-)	60	Moderate	60	Moderate
	Disturbance of birds	C	(-)	24	Low	24	Low
	Fatality of birds	O	(-)	42	Moderate	28	Low
	Disturbance of birds	D	(-)	24	Low	24	Low
	Archaeological resources	C	(-)	24	Low	12	Very Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
				Score	Level	Score	Level
Archaeological and Cultural Heritage	Graves	C	(-)	12	Very Low	12	Very Low
	Cultural landscape	C	(-)	45	Moderate	45	Moderate
	Cultural landscape	O	(-)	55	Moderate	55	Moderate
	Cultural landscape	D	(-)	45	Moderate	40	Moderate
Palaeontology	Loss of fossil heritage resources	C	(-)	26	Low	13	Very Low
Traffic	Increased Road Incidents	C	(-)	56	Moderate	42	Moderate
	Road degradation	C	(-)	44	Moderate	33	Moderate
	Dust	C	(-)	36	Moderate	27	Low
	Intersection safety	C	(-)	56	Moderate	42	Moderate
	Intersection safety	O	(-)	33	Moderate	33	Moderate
Visual	Visual effect of construction activities on scenic resources and sensitive receptors	C	(-)	40	Moderate	30	Low
	construction activities of new access roads and construction camps on scenic resources and sensitive receptors	C	(-)	27	Low	18	Low
	Visual intrusion on scenic resources and sensitive receptors	O	(-)	48	Moderate	36	Moderate
	Visual effect of traffic on sensitive receptors	O	(-)	22	Low	22	Low
	Visual intrusion of activities to remove infrastructure	D	(-)	36	Moderate	24	Low
Social	Regional employment and household income	C	(+)	55	Moderate	60	Moderate
	Influx of people	C	(-)	33	Moderate	27	Low
	Tourism	C	(-)	30	Low	27	Low
	Surrounding landowners and communities	C	(-)	44	Moderate	30	Low



Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
	Regional employment and household income	O	(+)	60	Moderate	65	High
	Funding of local socio-economic development	O	(+)	55	Moderate	60	Moderate
	Influx of people	O	(-)	33	Moderate	30	Low
	Tourism	O	(-)	33	Moderate	30	Low
	Surrounding landowners and communities	O	(-)	36	Moderate	22	Low
	Regional employment and household income	C	(+)	55	Moderate	60	Moderate
	Influx of people	C	(-)	33	Moderate	27	Low
	Tourism	C	(-)	30	Low	27	Low
	Surrounding landowners and communities	C	(-)	44	Moderate	30	Low

### 3.3 APPLICABLE DOCUMENTATION

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

- BA for the Proposed Mura 1 Solar PV Facility;
- Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity; and
- EA issued by the DFFE in terms of the NEMA (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 Legislation**

Legislation	Description of Legislation and Applicability
<p>The Constitution of South Africa (No. 108 of 1996)</p>	<p>The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order 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 in 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.</p>
<p>National Environmental Management Act (No. 107 of 1998)</p>	<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&amp;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 conclude that the activities listed in in this section are considered applicable to the development: A S&amp;EIR process must be followed. An EA is required and will be applied for with the DFFE.</p>
<p>National Environmental Management: Waste Act (59 of 2008) (NEM:WA)</p>	<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>



Legislation	Description of Legislation and Applicability
	<p>However, the contents of the BA Report and this EMPr includes reasonable measures for the prevention of pollution and good international industry practice (GIIP).</p>
<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<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>The terrestrial biodiversity assessment identifies no CBAs within the Mura 1 footprint area. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives.</p> <p>The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants will be included in the Environmental Management Programme (EMPr).</p>
<p>National Environmental Management Protected Areas Act (No. 57 of 2003)</p>	<p>The purpose of the National Environmental Management Protected Areas Act (No. 57 of 2003) (NEMPAA) is to, <i>inter alia</i>, 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.”</p> <p>According to the National Parks Area Expansion Strategy (NPAES), there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas. The study area is therefore outside the NPAES focus area.</p>
<p>The National Water Act (No. 36 Of 1998)</p>	<p>The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment.</p> <p>The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water that the Minister may declare a watercourse.</p>

Legislation	Description of Legislation and Applicability
	<p>Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses applicable to the proposed Project include:</p> <ul style="list-style-type: none"> <li>a) Taking water from a water resource;</li> <li>c) Impeding or diverting the flow of water in a watercourse;</li> <li>g) Disposing of waste in a manner which may detrimentally impact on a water resource;</li> <li>i) Altering the bed, banks, course or characteristics of a watercourse;</li> </ul> <p>The DWS will make the final decision on water uses that are applicable to the project through a pre-application meeting after which a Water Use Authorisation Application (WUA) as determined by the risk assessment will be undertaken in compliance with procedural regulations published by the DWS within General Notice 267 (GN267). These regulations specify required information per water use and the reporting structure of required supporting technical information.</p>
<p>The National Heritage Resources Act (No. 25 Of 1999)</p>	<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"> <li>■ Section 35 (4) - No person may, without a permit issued by the responsible heritage resources authority- <ul style="list-style-type: none"> <li>• destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;</li> <li>• destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite.</li> </ul> </li> <li>■ 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"> <li>• any development or other activity which will change the character of a site— (i) exceeding 5 000 m<sup>2</sup> 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.</li> </ul> </li> </ul> <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</p>

Legislation	Description of Legislation and Applicability
	<p>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 Mura 1 Solar PV 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 Heritage Report has been carried out by a suitably qualified specialist, revealing:</p> <ul style="list-style-type: none"> <li>▪ Stone artefacts from the Later Stone Age (LSA) located to the south of Mura 1.</li> </ul> <p>The proposed project will be loaded onto the SAHRIS portal for comment by SAHRA and HWC.</p>
<p>Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)</p>	<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>

Legislation	Description of Legislation and Applicability
<p>National Environment Management Air Quality Act (No. 39 of 2004)</p>	<p>The National Environment Management: Air Quality Act (No. 39 of 2004) (NEMAQA) came into effect on 11 September 2005. Persons undertaking such activities listed under GNR 893, as amended, are required to possess an Atmospheric Emissions License (AEL).</p> <p>The National Dust Control Regulations (GNR 827) were promulgated in terms of Section 32 of NEMAQA, which aim at prescribing general measures for the control of dust in both residential and non-residential areas.</p> <p>Although no AEL will be required for the construction and operation of the Mura 1 Solar PV Facility, the dust control regulations will be applicable during construction.</p>
<p>Conservation of Agricultural Resources Act (No. 43 of 1983)</p>	<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>
<p>Civil Aviation Act (No. 13 of 2009)</p>	<p>Civil aviation in South Africa is governed by the Civil Aviation Act (Act 13 of 2009). This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by South African Civil Aviation Authority (SACAA) as an agency of the Department of Transport (DoT). SACAA achieves the objectives set out in the Act by complying with the Standards and Recommended Practices (SARPs) of the International Civil Aviation Organisation (ICAO), while considering the local context when issuing the South African Civil Aviation Regulations (SA CARs).</p> <p>As of the 1st of May 2021, Air Traffic and Navigation Services (ATNS) has been appointed as the new Obstacle application Service Provider for Windfarms and later Solar Plants. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Windfarms and in due time Power Plant assessments.</p> <p>The DFFE Screening Tool Report identified Civil Aviation as having low sensitivity for the proposed Mura 1 Solar PV Facility, and no major or other types of civil aviation aerodromes.</p> <p>ATNS and SACAA will be included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought from these authorities as applicable.</p>

Legislation	Description of Legislation and Applicability
Occupational Health and Safety Act (No. 85 of 1993)	<p>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.</p>
National Energy Act (No. 34 of 2008)	<p>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 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"> <li>■ Ensure uninterrupted supply of energy to the Republic;</li> <li>■ Promote diversity of supply of energy and its sources;</li> <li>■ Facilitate effective management of energy demand and its conservation;</li> <li>■ Promote energy research;</li> <li>■ Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy;</li> <li>■ Ensure collection of data and information relating to energy supply, transportation and demand;</li> <li>■ 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;</li> <li>■ Provide for certain safety, health and environment matters that pertain to energy;</li> <li>■ Facilitate energy access for improvement of the quality of life of the people of Republic;</li> <li>■ Commercialise energy-related technologies;</li> <li>■ Ensure effective planning for energy supply, transportation, and consumption; and</li> <li>■ Contribute to sustainable development of South Africa’s economy.</li> </ul> <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"> <li>■ Achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa;</li> <li>■ 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</li> </ul>

Legislation	Description of Legislation and Applicability
	<p>of the electricity supply industry within the broader context of economic energy regulation in the Republic:</p> <ul style="list-style-type: none"> <li>■ Facilitate investment in the electricity supply industry;</li> <li>■ Facilitate universal access to electricity;</li> <li>■ Promote the use of diverse energy sources and energy efficiency;</li> <li>■ Promote competitiveness and customer and end user choice; and</li> <li>■ Facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public.</li> </ul> <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>

#### 4.1.1 **GENERIC EMPR RELEVANT TO AN APPLICATION FOR SUBSTATION AND OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE**

NEMA requires that an EMPr be submitted where a BAR has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation. The content of an EMPr must either contain the information set out in Appendix 4 of the EIA Regulations, 2014, as amended, or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the CA.

GN 435 of 22 March 2019 identified a generic EMPr relevant to applications for substations and overhead electricity transmission and distribution infrastructure which require authorisation in terms of Section 42(2) of NEMA. Applications for overhead electricity transmission and distribution infrastructure that trigger Activity 11 of Listing Notice 1 or Activity 9 of Listing Notice 2 and any other listed or specified activities must use the generic EMPr.

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

The generic EMPr for substations have been used as a basis for this EMPr. The *Generic Environmental Management Programme (EMPr) for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity* is attached as **Appendix D**.

The generic EMPr for powerlines is not applicable therefore it has not been included in this EMPr.



## 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. Mura 1 (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. Mura 1'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 Contract during construction and as specified by the DFFE during operation;
- Being fully familiar with the BAR, EA conditions and the EMPr;
- Applying for an amendment of the EA from the DFFE as and when required in line with the prevailing legislation
- 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 EA 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"> <li>■ Is the designated authority responsible for authorising this EMPr and has overall responsibility for ensuring that the Mura 1 complies with this EMPr, and any conditions listed in the Environmental Authorisation.</li> <li>■ Shall also be responsible for approving any significant amendments that may be required to the EMPr.</li> <li>■ May further perform random site inspections to check compliance with the EMPr.</li> </ul>
Project Manager/Engineer/Site Engineer	<ul style="list-style-type: none"> <li>■ Ensure that Mura 1 and the relevant contractor/s are aware of all specifications, legal constraints pertaining to the project during construction, specifically with regards to the environment.</li> <li>■ Ensure that all stipulations within the EMPr and conditions of the environmental authorisation are communicated and adhered to by Mura 1 and its contractor(s).</li> <li>■ Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site</li> </ul>

Designation	Roles and Responsibilities
	<p>inspections and meetings. This will be documented as part of the site meeting minutes.</p> <ul style="list-style-type: none"> <li>■ Be fully conversant with the BAR for the project, the conditions of environmental authorisation and all relevant environmental legislation.</li> </ul>
<p>Site Manager (EPC Contractor)</p>	<ul style="list-style-type: none"> <li>■ Be fully conversant with the BAR, the conditions of environmental authorisation and the EMPr.</li> <li>■ Approve method statements.</li> <li>■ Provide support to the ECO.</li> <li>■ Be fully conversant with all relevant environmental legislation and ensure compliance thereof.</li> <li>■ Have overall responsibility for the implementation of the EMPr and conditions of the environmental authorisation</li> <li>■ Ensure that audits are conducted to ensure compliance to the EMPr and conditions of the environmental authorisation.</li> <li>■ Liaise with the Project Manager or his delegate, the ECO and others on matters concerning the environment</li> <li>■ Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution and unnecessary degradation onsite.</li> <li>■ Confine construction activities to demarcated areas.</li> </ul>
<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 may be as specified by the DFFE (such as annually) by the external EO or ECO. 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&amp;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 Mura 1 (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"> <li>■ 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;</li> <li>■ 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</li> <li>■ Relevant experience in environmental site management and EMPr compliance monitoring.</li> </ul> <p>The EO’s responsibilities include, but not limited to:</p> <ul style="list-style-type: none"> <li>■ Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the EA, environmental legislation and EMPr;</li> <li>■ Keeping a register of compliance / non-compliance with the environmental specifications;</li> <li>■ Identifying and assessing previously unforeseen, actual or potential impacts on the environment;</li> <li>■ Ensuring that a brief weekly environmental monitoring report is submitted to the ECO;</li> </ul>

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> <li>■ Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ECO and Contractor;</li> <li>■ Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land;</li> <li>■ Attending site meetings (scheduled and ad hoc);</li> <li>■ 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;</li> <li>■ Ensuring that a copy of the EA 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;</li> <li>■ Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the DEA;</li> <li>■ Assisting the Contractor in drafting environmental method statements and/or the Environmental Policy where such knowledge/expertise is lacking;</li> <li>■ 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</li> <li>■ Maintaining the following on site:               <ul style="list-style-type: none"> <li>● A weekly site diary.</li> <li>● A non-conformance register (NCR).</li> <li>● An I&amp;AP communications register, and</li> <li>● A register of audits.</li> <li>● Records of all communication received in relation to compliance actions.</li> </ul> </li> </ul> <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 Mura 1 to monitor the project compliance with the EMPr and conditions of the environmental authorisation 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"> <li>■ Be fully conversant with the BAR, the conditions of environmental authorisation and the EMPr;</li> <li>■ Be fully conversant with all relevant environmental legislation and ensure compliance thereof;</li> <li>■ Approve method statements;</li> <li>■ Remain employed until the completion of the construction activities; and</li> <li>■ Report to the Project Manager, including all findings identified onsite.</li> </ul> <p>In addition, the ECO will:</p> <ul style="list-style-type: none"> <li>■ Undertake independent monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation;</li> <li>■ Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed;</li> <li>■ Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and</li> </ul>

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> <li>■ Ensure that activities onsite comply with all relevant environmental legislation.</li> </ul>
Contractors, Staff and Service Providers	<ul style="list-style-type: none"> <li>■ Prepare Method Statements as per the EMPr, and ensure all activities are conducted as per the approved Method Statements.</li> <li>■ Regular on-site auditing to assess performance against the requirements of this EMPr.</li> <li>■ Completion of the appropriate training requirements as specified in the training program.</li> <li>■ Implementation and maintenance of environmental management controls as set out in the project's environmental management documentation.</li> </ul>

**Refer to: Table 1 (Part A, Section 3) of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.**

## 5.2 ENVIRONMENTAL AWARENESS PLAN

Legislation requires that Mura 1 (via the appointed EPC contractor/contractor/principal contractor) must develop an environmental awareness plan that describes the manner in which Mura 1 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.

Mura 1 will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. Mura 1 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 Labour 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 EMPr 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 EMPr. The attendance registers must be kept on file.

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place. **Table 5-2** indicates the minimum requirements as set out in the generic EMPrs for the development of overhead transmission and distribution infrastructure and for the development and expansion of substation infrastructure for the transmission and distribution of electricity.

**Table 5-2 - Documentation Reporting and Compliance Requirements as per the generic EMPrs**

Aspect	Refer to Generic EMPr (Part A)
Document control/Filing system	Section 4.1
Documentation to be available	Section 4.2
Weekly Environmental Checklist	Section 4.3
Environmental site meetings	Section 4.4
Required Method Statements	Section 4.5
Environmental Incident Log (Diary)	Section 4.6
Non-compliance	Section 4.7
Corrective action records	Section 4.8
Photographic record	Section 4.9
Complaints register	Section 4.10
Claims for damages	Section 4.11
Interactions with affected parties	Section 4.12
Environmental audits	Section 4.13
Final environmental audits	Section 4.14

**Refer to: Part A, Section 4 of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.**

## 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 EMPr and conditions of the environmental authorisation 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, Mura 1 (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.

Mura 1 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 EA. 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 environmental authorisation 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 environmental authorisation 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 BAR and 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 following documentation must be kept onsite in order to record compliance with the EMPr and conditions of the environmental authorisation:

- Record of complaints; and
- Record of emergencies and incidents.

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 EA, 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 GENERIC ENVIRONMENTAL CONTROLS

This section refers to construction related activities that are common to the development of the substations associated with Mura Solar PV Facility as defined within the pre-approved generic EMPs. For each activity, a set of prescribed environmental controls and associated management actions have been identified. Contractors shall implement these controls as a minimum requirement for mitigating the impact of particular construction related activities.

These control measures are defined within Part B: Section 1 of the pre-approved generic EMP (attached as **Appendix D**). The format of a general environmental control is shown below, see **Table 6-1**. The boxes shaded in green are predefined and represent minimum standards for the management of that particular aspect. The Contractor will be required to adhere to all impact management actions (where applicable to the construction related activity) for the Project. The boxes shaded in red assign responsibility for the implementation and monitoring of the impact management actions. This implementation and monitoring information is project specific and shall be completed by the Contractor prior to commencement of construction.

**Table 6-1 – Format of a general environmental control illustrating aspects which are predefined versus those which still need to be completed by the contractor**

<b>Management Objective:</b>	Predefined as part of Generic EMP					
<b>Management Outcome:</b>	Predefined as part of Generic EMP					
<b>Impact Management Actions</b>	<b>Implementation</b>			<b>Monitoring</b>		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<b>Predefined as part of Generic EMP</b>	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor

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



The construction related activities addressed within Part B: Section 1 of the pre-approved generic EMPs are as follows:

**Table 6-2 - Activities and management measures as per generic EMPr (Part B: Section 1)**

<b>Activity</b>	<b>Refer to Generic EMPr for the development and expansion of substation infrastructure, attached as Appendix D (Part B: Section 1)</b>
Environmental awareness training	5.1
Site Establishment development	5.2
Access restricted areas	5.3
Access roads	5.4
Fencing and Gate installation	5.5
Water Supply Management	5.6
Storm and wastewater management	5.7
Solid and hazardous waste management	5.8
Protection of watercourses and estuaries	5.9
Vegetation clearing	5.10
Protection of fauna	5.11
Protection of heritage resources	5.12
Safety of the public	5.13
Sanitation	5.14
Prevention of disease	5.15
Emergency procedures	5.16
Hazardous substances	5.17
Workshop, equipment maintenance and storage	5.18
Batching plants	5.19
Dust emissions	5.20



Activity	Refer to Generic EMPr for the development and expansion of substation infrastructure, attached as Appendix D (Part B: Section 1)
Blasting	5.21
Noise	5.22
Fire prevention	5.23
Stockpiling and stockpile areas	5.24
Finalising tower positions	Not applicable to a Solar PV facility
Civil works	5.25
Excavation (and Installation) of foundations	5.26
Installation of foundations, cable trenching and drainage systems	5.27
Assembly and erecting towers	Not applicable to a Solar PV facility
Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)	5.28
Stringing (and cabling)	5.30
Testing and Commissioning (all equipment testing, earthing system, system integration)	5.31
Socio-economic	5.32
Temporary closure of site	5.33
Dismantling of old equipment	5.34
Landscaping and rehabilitation	5.35

**Refer to: Part B – Section 1 of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.**

## 7 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 Mura 1 Solar PV Facility. 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 conflict 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 Mura 1 Solar PV Facility. 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 **Table 7-1** below.

**Table 7-1 – Structure of EMPr**

Column	Description
<b>Activity/Aspect</b>	Highlights the various activities/aspects associated with the project i.e. the contractors' activities that will interact with the environment.
<b>Impact Management Outcome</b>	The desired outcomes from effectively minimising negative impacts and/or enhancing positive impacts.
<b>Impact Management Actions/Measures</b>	Indicates the actions required to prevent and /or minimise the potential impacts on the environment that are associated with the project.
<b>Indicator and Compliance Management</b>	Items that will assist with determining compliance against management actions.
<b>Responsibility</b>	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.
<b>Priority Timeframe</b>	Indicates when the actions for the specific aspect must be implemented and/or monitored.



**Table 7-2 – Contractor laydown area and site access: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>CONTRACTOR LAYDOWN AREA AND SITE ACCESS</b>			
<p><b>Impact Management Outcome:</b></p> <ul style="list-style-type: none"> <li>■ 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.</li> </ul>			
<p><b>Indicator and Compliance Mechanism:</b></p> <ul style="list-style-type: none"> <li>■ Health, safety, environmental and community incident and complaints management system register.</li> <li>■ Close-out on incidents.</li> <li>■ Monitoring and audit reports.</li> <li>■ Inductions training and register.</li> <li>■ Environmental awareness programme/toolbox talks.</li> </ul>			
Project Initiation of Construction Activities	Appoint an ECO to manage and verify compliance with the EA and EMPr.	<ul style="list-style-type: none"> <li>■ Project Manager</li> <li>■ EO</li> <li>■ Contractor (Site Manager)</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Decommissioning</li> </ul>
	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 <b>Figure 3-1</b> .. 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.		
	Site clearing must be limited to the footprint of the infrastructure requirements.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		■ Construction
	Firefighting equipment must be securely placed and inspected monthly.		



**Table 7-3 – Vehicle, Equipment and Machinery Management: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT</b>			
<p><b>Impact Management Outcome:</b></p> <ul style="list-style-type: none"> <li>▪ To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite.</li> </ul>			
<p><b>Indicator and Compliance Mechanism:</b></p> <ul style="list-style-type: none"> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Close-out on incidents.</li> <li>▪ Monitoring and audit reports.</li> <li>▪ Transport route delineation.</li> <li>▪ Daily equipment, machinery and vehicle checklists.</li> <li>▪ Incident classification and reporting procedure.</li> </ul>			
<p>Operation of Equipment, Machinery and Vehicles</p>	<p>Ensure that the equipment, machinery and vehicles are adequately maintained so as to:</p> <ul style="list-style-type: none"> <li>▪ Reduce the potential for spillages of oil, diesel, fuel or hydraulic fluid.</li> <li>▪ Ensure road-worthiness.</li> <li>▪ Reduce emissions.</li> </ul> <p>Evidence of such maintenance must be recorded and maintained onsite for verification.</p> <p>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</p>	<ul style="list-style-type: none"> <li>▪ EO</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> <li>▪ Decommissioning</li> </ul>



**Table 7-4 – Fuel and Chemical Management: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>FUEL AND CHEMICAL MANAGEMENT</b>			
<p><b>Impact Management Outcome:</b></p> <ul style="list-style-type: none"> <li>▪ To ensure the correct storage, handling and disposal of fuels and chemicals in order to prevent impacts to the surrounding environment.</li> </ul>			
<p><b>Indicator and Compliance Mechanism:</b></p> <ul style="list-style-type: none"> <li>▪ Maintenance records.</li> <li>▪ Safe disposal certificates (if applicable)</li> <li>▪ Material safety data sheets (MSDS).</li> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Chemicals management procedure (to be developed).</li> <li>▪ Monitoring and audit reports.</li> <li>▪ Training records.</li> </ul>			
Fuel and Chemical Management	<p>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.</p>	<ul style="list-style-type: none"> <li>▪ EO</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
	<p>Indicate the location of the fuel and chemical storage area on the layout plans.</p>		
	<p>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.</p>		





Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	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.		
	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.		
	Leaking equipment and vehicles must be repaired immediately or be removed from 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"> <li>■ EO</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	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 7-5 – Waste Management: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>WASTE MANAGEMENT</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Induction training and records.</li> <li>▪ Waste Management Plan (WMP).</li> <li>▪ Relevant SANS Codes of Practice.</li> <li>▪ Waste manifests and safety disposal certificates (all waste streams).</li> <li>▪ Emergency preparedness and response procedure.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Monitoring and audit reports.</li> </ul>			
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"> <li>▪ EO</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> <li>▪ Decommissioning</li> </ul>
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the WMP.		
	Prohibit littering and burning 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.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	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.		
	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 a WMP.	<ul style="list-style-type: none"> <li>■ ECO</li> <li>■ EO</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> <li>■ Decommissioning</li> </ul>
	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 / banded areas		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	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		
	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 spills should be reported to the authorities as per the emergency preparedness and response frequencies / specifications.		



**Table 7-6 – Health and Safety: EMP Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>HEALTH AND SAFETY</b>			
<p><b>Impact Management Outcome:</b></p> <ul style="list-style-type: none"> <li>■ To ensure communication with members of the public to promote safety awareness.</li> <li>■ To prevent public access to construction sites and storage areas.</li> <li>■ To ensure safety for all onsite personnel.</li> </ul>			
<p><b>Indicator and Compliance Mechanism:</b></p> <ul style="list-style-type: none"> <li>■ Induction training and records.</li> <li>■ Health, safety, environmental and community incident and complaints management system register.</li> <li>■ Monitoring and audit reports.</li> <li>■ Incident classification and reporting management procedure (to be developed).</li> <li>■ PPE Register.</li> <li>■ Occupational health and safety plan (to be developed).</li> <li>■ Health and safety protocol (to be developed).</li> <li>■</li> </ul>			
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"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	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"> <li>■ Contractor/Operator</li> <li>■ Site Manager</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe	
	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"> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>	
	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, first responder contact numbers.			
	Provide and wear appropriate PPE onsite.	<ul style="list-style-type: none"> <li>▪ Contractor/Operator</li> <li>▪ Site Manager</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>	
	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"> <li>▪ Contractor/Operator</li> <li>▪ Site Manager</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>	
	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"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>	
	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"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>	
	<p>Outside work must be stopped during thunderstorms.</p> <p>Lighting conductors may be required for the final installation, to be confirmed during design phase.</p>	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>	
Facility emergencies	Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as:	<ul style="list-style-type: none"> <li>▪ Operator</li> </ul>	<ul style="list-style-type: none"> <li>▪ Operation</li> </ul>	





Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> <li>▪ appointment of emergency controller,</li> <li>▪ emergency isolation systems for electricity,</li> <li>▪ emergency isolation and containment systems for electrolyte,</li> <li>▪ provision of PPE for hazardous materials response,</li> <li>▪ provision of emergency facilities for staff at the main office building,</li> <li>▪ provision of first aid facilities,</li> <li>▪ first responder contact numbers etc</li> </ul>		
	<p>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.</p>	<ul style="list-style-type: none"> <li>▪ Operator</li> </ul>	<ul style="list-style-type: none"> <li>▪ Operation</li> </ul>
	<p>Material Safety Data Sheets (MSDSs) must be made available for all chemicals and substances on site</p>	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ Operator</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
Fire risk	<p>Full Process Safety Management system with all elements to be implemented to highest international best practice levels.</p>	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ Operator</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
	<p>Suitable fire-fighting equipment on site near source of fuel, e.g. diesel tank, generators, mess, workshops etc</p>		
	<p>Safety integrity level rating of equipment (failure probably) with suitable redundancy if required.</p>		
	<p>Ensure regular testing of emergency alarm systems are undertaken.</p>		
	<p>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.</p>		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Public Safety	Restrict public access by employing full time security for the site.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
BESS	Except during shipping, ideally the units should not be stored any closer to each other than they would be in the final installation so that propagation is prevented, i.e. laydown area needs to be considered.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	Handling protocols to be provided by battery supplier.		
	End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery units from day one.	<ul style="list-style-type: none"> <li>■ Operator</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>
	Operating manuals to be provided including start-up, shut-down, steady state, monitoring requirements.		
	Maintenance manuals with make safe, decontamination and repair procedures.		
	Proposed maintenance schedules daily, weekly, monthly, annual etc.		
	Provided portable equipment for calibration and for testing/verification of defective equipment.		
	There needs to be careful thought given to procedures to be adopted before entering into the BESS or a container under normal circumstances (confined space) but particularly after a BMS shut down where there may be flammable or toxic gases present, a fire etc.		
Decommissioning of facility	End of Life shutdown procedure including a risk assessment of the specific activities involved.	<ul style="list-style-type: none"> <li>■ Operator</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Decommissioning</li> </ul>
	Re-purpose the equipment with associated environmental impact considered.		
	Disposal according to local regulations and other international directives.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Operator should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.		



**Table 7-7 – Water Management: EMP Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>WATER MANAGEMENT</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>■ To implement measures to prevent the contamination on surface and groundwater resources.</li> <li>■ To prevent erosion.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>■ Induction training and records.</li> <li>■ WMP (to be developed).</li> <li>■ Water Use Licence (or General Authorisation as applicable).</li> <li>■ Incident classification and reporting management procedure (to be developed).</li> <li>■ Environmental awareness programme/toolbox talks.</li> <li>■ SWMP (to be developed).</li> </ul>			
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"> <li>■ Site Manager</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Pre-Construction</li> </ul>
	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 and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Install properly sized culverts with erosion protection measures at the present road / track crossings where already installed by local landowners / public works entities.		
	To appropriately manage storm water, the SWMP needs to be implemented.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Pre- construction</li> <li>■ Construction</li> <li>■ Operation</li> </ul>
	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.		
	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"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	No runoff may be discharged or directed into the wetlands.		
	Containment of all contaminated water by means of careful run-off management on site.		
	Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out for the project and strictly enforced.		
Groundwater Management	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	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.		<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent groundwater contamination.		<ul style="list-style-type: none"> <li>■ Construction</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment		
Potable Water Management	Onsite staff are to be provided with an appropriate potable water supply, safe and healthy sanitary facilities and protection against exposure to environmentally dangerous or unhealthy situations or conditions.	<ul style="list-style-type: none"> <li>■ Contractor/Operator</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	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.		





**Table 7-8 – Air quality: EMP Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>AIR QUALITY</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To ensure that impacts to air quality of the surrounding environment are minimised.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Complaints register.</li> <li>▪ Incident reporting system.</li> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Equipment, machinery and vehicle maintenance.</li> </ul>			
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"> <li>▪ EO</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
	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"> <li>▪ Construction</li> </ul>
	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"> <li>▪ Plan earth-moving works so that they are completed just prior to the time they are needed</li> </ul>		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> <li>■ Observe weather conditions and do not commence or continue earth moving works if conditions are unsuitable e.g., under conditions of strong winds</li> <li>■ Reduce off-site hauling via balanced cut and fill operations</li> <li>■ Pre-water areas to be disturbed</li> </ul>		
	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 7-9 – Noise: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>NOISE</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To ensure that noise impacts to the surrounding environment are minimal or mitigated.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Complaints register.</li> <li>▪ Incident reporting system.</li> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Equipment, machinery and vehicle maintenance.</li> </ul>			
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"> <li>▪ EO</li> <li>▪ Contractor/Operator</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
	Provide a complaints register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure		
	Regular maintenance of equipment to reduce the generation of additional unwanted noise		
	Avoid noisy activities at night-time and outside of normal weekend working hours where possible.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Due to rural nature of site, construction is unlikely to continue at after sunset, however if required to work afterhours, notices should be put up informing the public accordingly.		
	Employees / contractors are to be provided with appropriate hearing protection when undertaking noisy activities.	<ul style="list-style-type: none"> <li>▪ EO</li> <li>▪ Contractor/Operator</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
	Employees to be provided with hearing protection if working near equipment that exceeds the noise limits.	<ul style="list-style-type: none"> <li>▪ EO</li> <li>▪ Contractor/Operator</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>



**Table 7-10 – Soil, Land Use and Agriculture: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>SOIL, LAND USE AND AGRICULTURE</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To prevent any disturbance, erosion or contamination of soil resources.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Induction training and records.</li> <li>▪ WMP (to be developed).</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Monitoring and audit reports.</li> <li>▪ Stormwater Management Plan (SWMP) (to be developed).</li> </ul>			
Soil and Land Management	Land clearance must only be undertaken immediately prior to construction activities and only within the development footprint. Unnecessary land clearance must be avoided.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
	Access roads must have gradients or surface treatment to limit erosion, and road drainage systems must be accounted for.		
	Where an impact to the vegetation outside of the development footprint occurs, rehabilitation measures must be undertaken to maintain the baseline vegetation population and health.	<ul style="list-style-type: none"> <li>▪ EO</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
Erosion Management	A system of stormwater management, which will prevent erosion, will be an inherent part of the engineering on site.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	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	<ul style="list-style-type: none"> <li>■ Operator/Developer</li> <li>■ EO</li> </ul>	
Topsoil	Any excavations done during the construction phase, in areas that will be re-vegetated 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 is at the surface.		
	Topsoil should only be stripped in areas that are excavated.		
	Across the majority of the site, including construction laydown areas, it will be much more effective for rehabilitation, to retain the topsoil in place.		
	If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface.		
	It will be advantageous to have topsoil and vegetation cover below the panels during the operational phase to control dust and erosion.		





**Table 7-11 – Terrestrial Biodiversity: EMP Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>TERRESTRIAL BIODIVERSITY</b>			
<p><b>Impact Management Outcome:</b></p> <ul style="list-style-type: none"> <li>▪ Prevent the unnecessary destruction of, and fragmentation of the biodiversity of the area.</li> <li>▪ No excess habitat loss within sensitive areas.</li> <li>▪ Revegetation of cleared areas.</li> <li>▪ Alien vegetation clearing &amp; control.</li> <li>▪ Reduce erosion.</li> </ul>			
<p><b>Indicator and Compliance Mechanism:</b></p> <ul style="list-style-type: none"> <li>▪ Induction training and records.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Environmental awareness programme/toolbox talks.</li> <li>▪ Monitoring and audit reports.</li> </ul>			
No-go areas	Prior to commencement of construction, demarcate sensitive and no-go areas with construction tape, shield fencing etc as appropriate.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
Rehabilitation	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be implemented from the onset of the project	<ul style="list-style-type: none"> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
	Surface scarification and active rehabilitation of temporary use areas after construction with indigenous species.		
Alien Vegetation Management	Prior to commencement of construction, compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control, including monitoring specifications.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All alien vegetation occurring within construction and operational areas must be removed and monitored for re-growth.	▪ Operator	
	Walked Surveys of PV perimeter, access roads and other areas adjacent to hard infrastructure to monitor for alien vegetation and re-growth.		
Erosion Management	Remedial action to reduce erosion including revegetation where necessary.	▪ Contractor ▪ EO	▪ Construction



**Table 7-12 – Aquatic Biodiversity: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>AQUATIC BIODIVERSITY</b>			
<p><b>Impact Management Outcome:</b></p> <ul style="list-style-type: none"> <li>▪ Prevent the unnecessary destruction of, and fragmentation of the aquatic biodiversity of the area.</li> <li>▪ No excess aquatic habitat withing the area</li> <li>▪ Prevent contamination of wetlands</li> </ul>			
<p><b>Indicator and Compliance Mechanism:</b></p> <ul style="list-style-type: none"> <li>▪ Induction training and records.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Environmental awareness programme/toolbox talks.</li> <li>▪ Monitoring and audit reports.</li> </ul>			
Sensitive areas	Minimise any works within aquatic ecosystems and buffers. Locate all infrastructure outside of high-sensitivity areas (except for underground cables and where existing roads will be upgraded) and limit the placement of infrastructure in areas of medium aquatic sensitivity as far as possible.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ Developer</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
	Construction site camps should be placed at least 35m away from the delineated aquatic feature	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	
	Good housekeeping measures should be implemented at the construction sites	<ul style="list-style-type: none"> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	
Vegetation Management	Make sure that any construction materials brought onto the site are certified to be free of alien plant seed.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Rehabilitation	Rehabilitate disturbed aquatic habitats by revegetating them with suitable local indigenous vegetation.	<ul style="list-style-type: none"> <li>■ Contractor</li> <li>■ EO</li> </ul>	
	Use existing disturbed areas (e.g., roads and access tracks), where possible. In terms of new service tracks, these must be kept to a minimum and should ideally not result in any new / permanent water course crossings, but if these are required, then a specific walk down should be conducted with the specialist to identify the most suited crossing position. Where these crossings do occur, it needs to be monitored for erosion	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> <li>■ EO</li> </ul>	
Erosion	Construction near sensitive aquatic features should preferably be undertaken in the dry season; if necessary, sediment traps should be placed downstream of works to capture sediment.	<ul style="list-style-type: none"> <li>■ Contractor</li> <li>■ EO</li> </ul>	
	Ensure road crossings structures are properly designed to not result in blockage in the watercourses or erosion. For this area, a low water crossing, concrete slab through the watercourses is preferred.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> <li>■ EO</li> </ul>	
Potable water	The water should be obtained for construction purposes from an existing water allocation to the property or should be provided from a viable water source, including new yield-tested boreholes.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> </ul>	
	The groundwater supply can be sourced from either existing boreholes, newly developed boreholes, or a combination of these options		
	The legal status of groundwater use at each property should be confirmed. This will inform the need for future water use authorisations. All water uses as defined in the NWA (1998) need to be considered.		
	Monitoring of groundwater (abstraction volumes, quality and water levels) will be required, this should ideally be implemented one year prior to the start of construction if the project timeframes permit.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Erosion	Access project infrastructure using existing roads and access tracks established during the construction phase.	<ul style="list-style-type: none"> <li>■ Contractor</li> <li>■ Operator</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> <li>■ Decommissioning</li> </ul>
	Ensure road crossings structures are not resulting in blockage in the watercourses or erosion.		
Alien Plant Management	Invasive alien plant growth and signs of erosion should be monitored on an ongoing basis to ensure that the disturbed areas do not become infested with invasive alien plants.		
Stormwater	Stormwater management systems must be in place at the access tracks and built areas to dissipate stormwater over a broad area by covering cleared areas with suitable local indigenous vegetation or by directing and spreading stormwater with berms or channels and swales adjacent to hardened surfaces.		



**Table 7-13 – Plant Species: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>PLANT SPECIES</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>■ To minimise impact to the vegetation community</li> <li>■ To minimise impact to plant SCC</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>■ Induction training and records.</li> <li>■ Environmental awareness programme/toolbox talks.</li> <li>■ Monitoring and audit reports.</li> </ul>			
Vegetation Management	Develop and implement alien vegetation, soil erosion, revegetation and rehabilitation management plans based on the site attributes and environmental constraints. This can be developed post-authorisation once the project is certain to go ahead.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	Preconstruction walk-through of the final development footprint to check the final footprint areas and access road routes to verify that sensitive habitats are being avoided as much as possible and also provide certainty as to the zero expected impact on plant SCC.		
	Monitoring of vegetation clearing during construction by the EO to ensure that any protected plant within the development footprint area are translocated to safety where necessary.		
Permitting	Ensure that all vegetation-related preconstruction permits have been obtained, and surveys and walk-throughs have been conducted prior to the commencement of construction activity.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Rehabilitation	Annual rehabilitation activities in line with the Generic EMPr requirements (for example, any erosion problems observed on-site should be rectified as soon as possible using appropriate revegetation and erosion control works).	<ul style="list-style-type: none"><li>▪ EO</li><li>▪ Operator</li></ul>	<ul style="list-style-type: none"><li>▪ Operation</li></ul>
Erosion Monitoring	Annual monitoring of runoff and erosion from the PV area into the adjacent veld to ensure that the hardened surfaces and PV arrays within the PV area are not generating a lot of runoff that is impacting adjacent natural areas. There should be follow-up erosion control and alien vegetation clearing where required.	<ul style="list-style-type: none"><li>▪ EO</li><li>▪ Operator</li></ul>	<ul style="list-style-type: none"><li>▪ Operation</li></ul>





**Table 7-14 – Animal Species: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>ANIMAL SPECIES</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ Prevent the loss of the faunal community</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Induction training and records.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Environmental awareness programme/toolbox talks.</li> <li>▪ Adhere to sensitivity map criteria</li> <li>▪ Monitoring and audit reports.</li> </ul>			
Fauna Management	All vehicles should adhere to a low speed limit on site. Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h.	<ul style="list-style-type: none"> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
	All laydown areas, construction sites etc with waste disposal bins, should be provided with lockable bins that are tamper proof by baboons, monkeys and other fauna.		
	Search and rescue for reptiles and other vulnerable species during construction, before areas of intact vegetation are cleared. Such search and rescue should be conducted by relevant experts with experience in search and rescue of the faunal groups concerned.		
	Limiting access to the site and ensuring that construction staff and machinery remain within the demarcated construction areas during the construction phase. Environmental induction for all staff and contractors on-site.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	No excavated holes or trenches should be left open for extended periods as fauna may fall in become trapped.		
	The design should ensure that there is no electrical fencing around substations (and associated battery facilities) or other features within 30cm of the ground as tortoises become stuck against such fences and are electrocuted to death. Alternatively, a guard wire set at 20cm can be used to keep larger tortoises away from the fence.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Developer</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	
	<p>The following contribution from the project is recommended towards conservation initiatives or Riverine Rabbit monitoring being undertaken in the area:</p> <ul style="list-style-type: none"> <li>■ R100 000 per year based on 2022 value must be made available for two years once construction has commenced. The way in which the funding is structured should be flexible, however, it is recommended that if Riverine Rabbit monitoring is still being undertaken on the Nuweveld Wind Farms and/or Hoogland Wind Farms, the project funding should prioritise contributing to these associated monitoring programmes or alternatively, contribute to the broader conservation initiative by any wind farms in the broader area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Developer</li> </ul>	<ul style="list-style-type: none"> <li>■ Pre-construction</li> </ul>
	A log should be kept detailing all fauna-related incidences or mortalities that occur on site, including roadkill, electrocutions etc. during construction and operation. These should be reviewed annually and used to inform operational management and mitigation measures.	<ul style="list-style-type: none"> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
Erosion Monitoring	There should be on-going maintenance and monitoring of the perimeter fences of the PV areas to ensure that there is not sedimentation or vegetation build-up that brings the electrified strands closer to the ground than the recommended 30cm. Should some fauna burrow under the fence, such burrow access-points can be allowed to remain provided that the fauna accessing the facility are not causing problems inside the facility or would be endangered themselves.	<ul style="list-style-type: none"> <li>■ EO</li> <li>■ Operator</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>





**Table 7-15 – Avifauna: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>AVIFAUNA</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>■ To minimise impacts to avifauna and their habitat</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>■ Induction training and records.</li> <li>■ Incident classification and reporting management procedure (to be developed).</li> <li>■ Environmental awareness programme/toolbox talks.</li> <li>■ Monitoring and audit reports.</li> </ul>			
Avifauna Habitat Management	Impact avoidance has already been implemented in the project design phase through the adherence to no-go buffers around sensitive receptors on site.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Pre-Construction</li> <li>■ Construction</li> </ul>
	All staff, vehicle and machinery activities should be strictly controlled at all times so as to ensure that the absolute minimum of surface area is impacted.		<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	Care should be taken not to introduce or propagate alien plant species/weeds during construction.		
	A carefully considered surface water/drainage management plan must be developed for the site including attention to the use of environmentally friendly cleaning chemicals.		<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
Avifauna Mortality	The risk of bird collision/entanglement with facility fences must be mitigated by using a fence design which is either highly visible to birds or has a tight enough mesh to avoid entanglement.	<ul style="list-style-type: none"> <li>■ Developer</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The risk of electrocution of large birds in the substations should be managed reactively. If any such electrocutions are recorded once operational this should be reported to an ornithologist for suitable case specific mitigation measures.	<ul style="list-style-type: none"> <li>■ Operator</li> <li>■ Ornithologist</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>
	It is strongly recommended that rodenticides not be used at the newly established Operation and Maintenance (O&M) buildings or around auxiliary infrastructure on the project site. While pest control of this nature may be effective, even so-called “environmentally friendly” rodenticides are toxic and pose significant secondary poisoning risk to predatory avifauna, especially owls.	<ul style="list-style-type: none"> <li>■ Operator</li> </ul>	
	If facility staff identify any bird nesting which interferes with operations this should be reported on fully through the sites incident reporting system. A suitably qualified ornithologist should be consulted for any case specific reactive mitigation measures. All nest management measures should only be undertaken in compliance with national and provincial environmental legislation in this regard.	<ul style="list-style-type: none"> <li>■ Operator</li> <li>■ Ornithologist</li> </ul>	
Monitoring	Operational phase bird monitoring should be conducted for at least one year as per the best practice guidelines.	<ul style="list-style-type: none"> <li>■ Ornithologist</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>



**Table 7-16 – Archaeological and Cultural Heritage: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>ARCHAEOLOGICAL AND CULTURAL HERITAGE</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>■ To ensure that sites/artefacts of heritage value are identified and protected.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>■ Health, safety, environmental and community incident and complaints management system register.</li> <li>■ Incident classification and reporting management procedure (to be developed).</li> <li>■ Monitoring and audit reports.</li> </ul>			
Chance Finds	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) found during construction activities, the finds must be reported and the Chance Find Protocol must be implemented ( <b>Section 8.14.1</b> ).	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	If any graves are uncovered during construction activities, the archaeologist must be called in to inspect the finds and/or the police find them to be heritage graves, mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> <li>■ Archaeologist</li> </ul>	
Cultural Site	Keep the construction duration as short as possible.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	Ensure that the smallest area possible is cleared for construction.		
	Ensure that any areas not required during operation are rehabilitated.		
	Ensure that all maintenance activities remain within the approved footprint.	<ul style="list-style-type: none"> <li>■ Operator</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Ensure that night time light pollution is minimised.		
	Keep the decommissioning duration as short as possible.	<ul style="list-style-type: none"><li>■ Site Manager</li></ul>	<ul style="list-style-type: none"><li>■ Decommissioning</li></ul>
	Ensure that the site is fully rehabilitated after the facility has been removed.	<ul style="list-style-type: none"><li>■ Contractor</li><li>■ EO</li></ul>	





**Table 7-17 – Palaeontology: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>PALAEONTOLOGY</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To ensure that palaeontological material is identified and protected.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Monitoring and audit reports.</li> </ul>			
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 ( <b>Section 8.14.1</b> ).	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>



**Table 7-18 – Traffic: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>TRAFFIC</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To ensure that the traffic impacts of the project are mitigated and managed.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Induction training and records.</li> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Monitoring and audit reports.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ PPE Register.</li> <li>▪ Occupational health and safety plan (to be developed).</li> <li>▪ Health and safety protocol (to be developed).</li> <li>▪ Traffic and transportation management plan</li> </ul>			
Management Plan	Traffic Management Plan (TMP) is to be compiled once the contractor has been appointed and all the relevant details of the construction process are known. The TMP needs to address, inter alia: <ul style="list-style-type: none"> <li>▪ clearly defined route/s to the site for specific vehicles needed to transport equipment and materials</li> <li>▪ scheduled deliveries to avoid local congestion;</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> <li>▪ Developer</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> </ul>
Records	A photographic record of the road condition should be maintained throughout the various phases of the development/s. This provides an objective assessment and mitigates any subjective views from road users.	<ul style="list-style-type: none"> <li>▪ Contractor</li> <li>▪ Developer</li> <li>▪ EO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> <li>▪ Decommissioning</li> </ul>
Signage and Notifications	Post relevant road signage along affected routes.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
		<ul style="list-style-type: none"> <li>EO</li> </ul>	
	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"> <li>Contractor</li> <li>Developer</li> <li>EO</li> </ul>	
	Create a local WhatsApp Group for the local community and post notices of road conditions and proposed alternatives. Developer to contribute to the maintenance of the public roads in the area during the construction phase of the development/s.	<ul style="list-style-type: none"> <li>Developer</li> </ul>	
Dust Emissions	Reduce travel speed for construction vehicles on the gravel road to reduce dust	<ul style="list-style-type: none"> <li>Contractor</li> </ul>	<ul style="list-style-type: none"> <li>Construction</li> </ul>
	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"> <li>Site Manager</li> <li>Contractor</li> <li>EO</li> </ul>	<ul style="list-style-type: none"> <li>Construction</li> </ul>
	All vehicles delivering equipment and material to the proposed development using the Molteno Pass and De Jager's Pass, shall be limited to a gross vehicle mass not exceeding ten tonnes.		
Road Management	Upgrade unpaved roads to a suitable condition for proposed construction vehicles.	<ul style="list-style-type: none"> <li>Contractor</li> </ul>	<ul style="list-style-type: none"> <li>Construction</li> </ul>
	Ensure that the roads are left in the same or better condition, post-construction.		
	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"> <li>Contractor</li> <li>Developer</li> </ul>	
	All remedial work or modifications to any of the public roads shall be done in consultation with and have the approval of the local road's authority (as is standard practice, this will be finalised during and be a requirement of the municipal planning approval process.	<ul style="list-style-type: none"> <li>Site Manager</li> <li>Contractor</li> <li>Developer</li> </ul>	



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The treacherous section of the gravel road, through the De Jager's Pass and Molteno Pass, is safety concern that need to be addressed by the developer in consultation with the local roads authority.	<ul style="list-style-type: none"> <li>■ Developer</li> </ul>	
	The route for construction vehicles from the TR 01606/7 to the TR05801 should not unduly impact the local community of Loxton and should avoid the commercial centre of Loxton.		
	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.		
Intersection Safety	Regular preventative maintenance of roads within the immediate vicinity of the site should be conducted over weekends to minimise the impact on the average construction period.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	Reduce speed at intersections and use appropriate traffic warning signs		<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	Identify alternative routes where possible		
	Request the assistance of local law enforcement		
	Ensure that all construction vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.		
	Provide drivers with advanced driver training.		
Permits	A permit must be obtained from the relevant authority for any abnormal loads transported.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> <li>■ Operator</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> <li>■ Decommissioning</li> </ul>



**Table 7-19 – Visual: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>VISUAL</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>▪ To ensure that the changes to the landscape character of the area are mitigated to minimise the negative impact.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>▪ Health, safety, environmental and community incident and complaints management system register.</li> <li>▪ Incident classification and reporting management procedure (to be developed).</li> <li>▪ Monitoring and audit reports.</li> </ul>			
Layout	The layout of the solar project (including all associated infrastructure) must avoid the very high (No-go) areas identified.	<ul style="list-style-type: none"> <li>▪ Developer</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pre-Construction</li> <li>▪ Construction</li> </ul>
	New construction camps to be located away from main district roads and if possible the camps authorised as part of the Nuweveld WEF should be utilised, if these are constructed.	<ul style="list-style-type: none"> <li>▪ Developer</li> <li>▪ Site Manager</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
Rehabilitation	Disturbed areas to be rehabilitated / revegetated as soon as possible during the construction phase.	<ul style="list-style-type: none"> <li>▪ Site Manager</li> <li>▪ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
	Stockpiles to be located within approved construction footprints.		
	Disturbed areas to be rehabilitated / revegetated as soon as possible during the construction phase.		
	Disturbed areas to be rehabilitated / revegetated as soon as possible after the decommissioning phase.		<ul style="list-style-type: none"> <li>▪ Decommissioning</li> </ul>



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Housekeeping	Recycling and refuse bins to be provided to eliminate litter from the site.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	Structures to be removed at the end of the life of the project.		<ul style="list-style-type: none"> <li>■ Decommissioning</li> </ul>
	Limit speed to reduce dust and noise emissions.		<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> <li>■ Decommissioning</li> </ul>
	Ensure that dust suppression techniques are implemented on all gravel access roads.	<ul style="list-style-type: none"> <li>■ EO</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Decommissioning</li> </ul>
Lighting	As far as possible, limit the amount of security and operational lighting present on site.	<ul style="list-style-type: none"> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>
	Light fittings for security at night should reflect the light toward the ground and prevent light spill.	<ul style="list-style-type: none"> <li>■ EO</li> <li>■ Contractor</li> <li>■ Operator</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> <li>■ Decommissioning</li> </ul>
	Lighting fixtures should make use of minimum lumen or wattage whilst adhering to safety and security requirements.		
	Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used		
	If economically and technically feasible, make use of motion detectors on security lighting.		
	The buildings should not be illuminated at night and should be painted in natural tones that fit with the surrounding environment.		
	Non-reflective surfaces should be used where possible.		



**Table 7-20 – Socio-Economic: EMPr Mitigation and Management Measures**

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<b>SOCIO-ECONOMIC</b>			
<b>Impact Management Outcome:</b> <ul style="list-style-type: none"> <li>■ To ensure that the negative socio-economic impacts are mitigated and managed.</li> <li>■ To ensure that the positive socio-economic impacts are enhanced.</li> </ul>			
<b>Indicator and Compliance Mechanism:</b> <ul style="list-style-type: none"> <li>■ Induction training and records.</li> <li>■ Health, safety, environmental and community incident and complaints management system register.</li> <li>■ Monitoring and audit reports.</li> <li>■ Incident classification and reporting management procedure (to be developed).</li> <li>■ PPE Register.</li> <li>■ Occupational health and safety plan (to be developed).</li> <li>■ Health and safety protocol (to be developed).</li> <li>■ Employment records and community engagement local enterprise development records.</li> </ul>			
Employment	Opportunities for the training of unskilled and skilled workers from local communities should be maximized, including those from adjacent farms who have indicated that they would like to benefit from the proposed project and its related opportunities.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	Using local sub-contractors where possible and requiring that contractors from outside the local area that tender also meet targets for how many locals are given employment.		
	Exploring ways to enhance local community benefits with a focus on broad-based BEE and preferential procurement.		





Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	A 'locals first' policy with regard to construction and operational labour needs.		
	An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> <li>■ Decommissioning</li> </ul>
Employee Management	The applicant and the contractors should develop a Code of Conduct for the project. The code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding landowners and land managers.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ Developer</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	The applicant and the contractor should implement a Tuberculosis and HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.		<ul style="list-style-type: none"> <li>■ Construction</li> </ul>
	The applicant should implement measures to assist and, if needed, fairly compensate potentially affected surrounding landowners whereby damages to farm property, stock theft or significant disruptions to farming activities can be minimized or reduced. Measures should be agreed on before construction commences.		<ul style="list-style-type: none"> <li>■ Operation</li> </ul>
	No construction workers, with the exception of security personnel, should be allowed to stay on the site overnight.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>■ Operation</li> </ul>
	The movement of workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis.		
Complaints	A complaints register should be available on site to any individual who may have a particular complaint with regards to the construction or operations processes.	<ul style="list-style-type: none"> <li>■ Site Manager</li> <li>■ Contractor</li> <li>■ EO</li> </ul>	<ul style="list-style-type: none"> <li>■ Construction</li> <li>■ Operation</li> </ul>
	The community should be able to contact the site manager or his/her representative to report any issues which they may have. The site manager and		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	his/her representative should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.		
	The community should be able to contact the site manager to report any issues which they may have. The site manager should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.		<ul style="list-style-type: none"> <li>▪ Operation</li> </ul>
Stakeholder Engagement	The applicant must establish a communications committee early on in the project to ensure inclusive planning and regular feedback from stakeholders.	<ul style="list-style-type: none"> <li>▪ Developer</li> </ul>	<ul style="list-style-type: none"> <li>▪ Operation</li> </ul>
	Community development should be guided by a community needs analysis, drawn up by a third party and based on local socio-economic conditions, a review of planning documents such as the IDP, and discussions with local government and community representatives. Interventions should be planned in collaboration with other energy developers in the area where relevant.		
	Close liaison with local municipal managers, local councillors and other stakeholders involved in socio-economic development is required to ensure that any projects are integrated into wider socio-economic development strategies and plans.		
	Close coordination with the municipality is required, including regular meetings.		

## 8 MANAGEMENT PLANS

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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 Mura 1 Solar PV Facility. 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;
- Plant Rescue and Protection Plan;
- Re-vegetation and Habitat Rehabilitation Plan;
- Stormwater Management Plan;
- Erosion Management Plan;
- Traffic and Transport Management Plan;
- Fauna Management Plan;
- Avifaunal Management Plan;
- Soil Management Plan;
- Heritage and Palaeontological Management Plan;
- Grievance Mechanism; and
- HIV/AIDS Management Plan.

### 8.1 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 ERP is intended as a practical working document for the proposed Mura 1 Solar PV Facility. 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.

### **8.1.1 ROLES AND RESPONSIBILITIES**

With respect to this plan, Mura 1 Solar PV Facility (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.

### **8.1.2 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 Mura 1 Solar PV Facility, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risks.

### **8.1.3 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.

### **8.1.4 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.

### 8.1.5 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

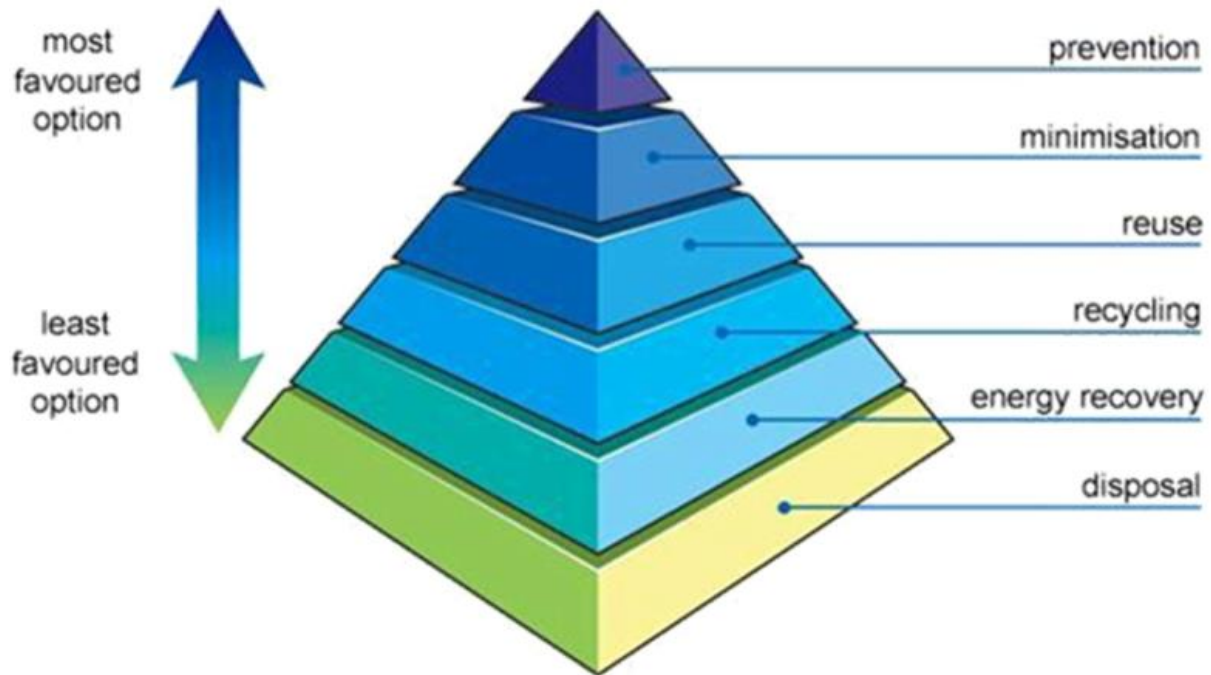
Emergency response drills and reporting will be maintained by the Project Manager and will provide information regarding required revisions to training or the emergency response actions. Each incident reported will be reviewed and investigated upon occurring. Actions will be identified where possible 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.

## 8.2 WASTE MANAGEMENT PLAN

### 8.2.1 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 8-1**) 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 8-1: Waste Hierarchy**

## 8.2.2 PROJECT STAGES

The purpose of this section is to assess the construction, operational processes of the proposed Mura 1 Solar PV Facility 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 8-1** 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 8-1 - Waste Management Options**

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

### 8.3 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 Mura 1 Solar PV Facility:

- 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.

### **8.3.1 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 LTWP 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 to WP 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.

### **8.3.2 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.

### 8.3.3 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

## 8.4 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.

## 8.5 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.

## 8.6 PLANT RESCUE AND PROTECTION PLAN

The purpose of the plant rescue and protection plan is to implement avoidance and mitigation measures, in addition to the mitigation measures included in the EMP to reduce the impact of the

development of the project on listed and protected plant species and their habitats, and to provide guidance on search and rescue of species of conservation concern.

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

- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.
- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned.
- Vegetation clearing must only commence after a walk down has been conducted by a suitably qualified person and the necessary permits obtained.
- Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.
- Vegetation removal must be limited to the construction site and must be removed only as it becomes necessary rather than removing all the vegetation throughout the site at once.
- Materials must not be delivered to the site prematurely which could result in additional areas being cleared or affected.
- No vegetation to be used for firewood.
- Gathering of firewood, fruit, medicinal plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.
- Construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.
- All natural areas impacted during construction must be rehabilitated with locally indigenous plant species or grassed accordingly.
- 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.
- Soil stockpiles must not become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation in the soil. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.
- It is a legal requirement to obtain permits for specimens or protected species that will be lost due to construction of the project.
- A detailed pre-construction walk-through survey will be required during a favourable season where possible, to locate any individuals of protected plants, as well as for any populations of threatened plant species. This survey must cover the footprint of all approved infrastructure, including internal access roads and substations. The best season is early to late Summer if possible, taking administrative processes into account, but will be influenced by recent rainfall and vegetation growth.
- It is possible that some plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas, but the description and appropriateness of such measures must be included in a Plant Rescue Plan. Any such measures will reduce the irreplaceable loss of resources as well as the cumulative effect. Note that Search and Rescue is only appropriate for



some species and that a high mortality rate can be expected from individuals of species that are not appropriate to transplant.

- Prior to construction commencing, a Plant Rescue Plan must be compiled to be approved by the appropriate authorities as part of the EMPr approval.
- For any plants that are transplanted, annual monitoring should take place to assess survival. This should be undertaken as per the frequency specified in the management plan and be undertaken by a qualified botanist. The monitoring programme must be designed prior to translocation of plants and should include control sites (areas not disturbed by the project) to evaluate mortality relative to wild populations.
- No collecting or poaching of any plant species.

#### Rescued plants

- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.

#### Threatened species

- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned.

For permitting purposes, the following flora survey is required prior to construction activities taking place:

- Detailed floristic walk-through survey of all footprint areas in order to document composition, especially of protected species. It is suggested this be undertaken after an appropriate time-period after rainfall, where possible, to allow emergence of any species of potential concern. The survey must also cover all footprint areas, including final road alignments. Renewable energy projects similar to the one assessed here tend to have high fluidity in terms of layout and technology, due to the current rapid evolution of the technology, which allows more efficient deployment of infrastructure. However, this means that “final” layouts regularly change. The walk-through survey:
  - Must assess the footprint that will be constructed – if this changes then the new footprint areas must be subject to a walk-through survey in full.
  - Must be undertaken in the correct season, if possible, taking administrative processes into account.
  - Must be adequately resourced to ensure it is done properly.
  - Must be undertaken by a competent botanist.

## 8.7 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.

## 8.8 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.

## 8.9 EROSION MANAGEMENT PLAN

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.

### 8.9.1 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.

### 8.10 TRAFFIC AND TRANSPORT MANAGEMENT PLAN

The purpose of a Traffic and Transportation Management Plan is to address regulatory compliance, traffic management practices, and protection measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the project site. The objectives of this plan include the following:

- To ensure compliance with all legislation regulating traffic and transportation within South Africa National, Provincial, Local and associated guidelines.
- To avoid incidents and accidents while vehicles are being driven and while transporting personnel, materials, and equipment to and from the project site.
- To raise greater safety awareness in each driver and to ensure the compliance of all safe driving provisions for all the vehicles.

- To raise awareness to ensure drivers respect and follow traffic regulations.
- To avoid the deterioration of access roads and the pollution that can be created due to noise and emissions produced by equipment, machinery, and vehicles.

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

- All vehicles used during the transport of materials and in the construction activities are required to be roadworthy per the National Road Traffic Act (NRTA) and display all pertinent certificates as required.
- All vehicles travelling to and from the site shall adhere to all laws imposed by the law enforcement agencies, and shall comply with any requests made by the law enforcement officials.
- For each convoy of abnormal vehicles/loads a designated safety officer shall be nominated. All abnormal vehicles and loads to be transported are required to have a valid permit before any trip is begun.
- The route must be assessed to determine if any structures or vegetation need to be temporarily or permanently relocated so as to avoid damage to the load as well as public and private property during the trips.
- A designated transport coordination manager must be appointed to oversee and manage the traffic safety officers. Additionally, the designated transport coordination manager must inform and keep up-to-date the interested and affected parties of all the activities taking place that may have a direct impact on them.
- A traffic safety officer shall be nominated to make all the necessary arrangements to maintain the required traffic measures for the duration of the project as outlined in the “Standard Specifications for Road and Bridge Works for State Road Authorities,” 1998 edition. The safety officer shall liaise daily with the transportation coordination manager to keep them apprised of the state of all the traffic arrangements.
- All construction vehicles that are entering the site shall also be available via radio or telephone communication to the transport coordination manager. So that in the event of an emergency, all vehicles can be accounted for.
- All vehicles shall comply with the posted speed limits on public roads as well as the speed limits within the development. For additional speed limits that are imposed on the construction traffic, refer to the South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 for the restrictions.
- All construction traffic shall comply with the legal load requirements as outlined in the National Road Traffic Act and National Road Traffic Regulations.
- Construction traffic entering the site along public roads must be limited to times when peak hour traffic can be avoided. The peak traffic occurs during 7h00 to 8h30, and 16h00 to 17h30.
- The South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 is to be used for all traffic during the construction activities of the proposed project.
- During periods of high construction traffic entering and exiting the site, it is recommended that flagmen help direct the traffic. This will enable the safe movement of construction and public traffic at the entrance and reduce the number of potential conflicts.

## 8.11 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 Mura 1 Solar PV Facility.

### 8.11.1 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.

#### WALK DOWN PRIOR TO CONSTRUCTION

Prior to the start of any construction or associated activities in areas of potential biodiversity concern, the Contractors will carry out a walk-through over the area accompanied by the ECO. The objective is to identify any sensitive habitats including potential for species of conservation interest (i.e. to consider the presence of any rare species of fauna, but establish possible risk of snake bites; inspect tree cavities for bats, etc.) that may be directly or indirectly affected by the proposed works.

Any important and significant habitats must be suitably demarcated and made a no-go area.

#### 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

## 8.12 AVIFAUNAL MANAGEMENT PLAN

The purpose of this avifaunal management plan is to provide mitigation and management measures onsite that to minimise the impacts on the priority bird species that potentially occur onsite. A number of the priority species are associated with the aquatic features on the site.

### 8.12.1 DESIGN MANAGEMENT PROCEDURES

- Ensure that key areas of conservation importance and sensitivity are avoided (as determined by the avifaunal specialist assessment).
- Where possible, installing transmission cables underground (subject to habitat sensitivities and in accordance with existing best practice guidelines for underground cable installation).
- Marking overhead cables using deflectors and where possible avoiding use over areas of high bird concentrations, especially for species vulnerable to collision

### 8.12.2 CONSTRUCTION MANAGEMENT PROCEDURE

The following mitigation and management measures must be implemented for the displacement of priority species due to disturbance during the construction phase:

- A site- specific construction management Plan (CEMP) must be implemented, which gives appropriate detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMP and must apply good environmental practice during construction. This must be done by an Avifaunal Specialist.
- Providing adequate briefing for site personnel and, in particularly sensitive locations. Personnel must be adequately briefed on the need to restrict habitat destruction, and must be restricted to the actual building sites.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads.
- During the construction phase, an avifaunal specialist must conduct surveys/exploration of the site. The aim will be to locate nest sites, so that these may continue to be monitored during the construction and operation phase.
- Measures to control noise and dust must be applied according to current best practice in the industry.
- Maximum use must be made of existing access roads and the construction of new roads must be kept to a minimum.
- Implementing an agreed post-development monitoring programme.
- Timing construction to avoid sensitive periods.

### 8.12.3 MONITORING

Monitoring of Red listed species nests (if any) to assess the impact of the construction activities.

## 8.13 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.



## 8.13.1 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.

## 8.14 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 Mura 1 Solar PV Facility area. Heritage resources are protected in terms of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

### 8.14.1 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 Mura 1 Solar PV Facility area. This chance find procedure (CFP) must be read in conjunction with the Environmental Authorisation, the Environmental Management Programme, Final BAR and the final layout archaeological ground-truthing report.

Potential fossils that could be found in the area include Fossil skulls, postcrania of tetrapods, amphibians, fish as well as rare petrified wood, plant compressions, vertebrate and invertebrate burrows within bedrocks. Mammalian bones, teeth & horn cores, freshwater molluscs, calcretised trace fossils & rhizoliths and plant material in alluvium.

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.

## **8.14.2 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.

## **8.15 GRIEVANCE MECHANISM**

### **8.15.1 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.

### **8.15.2 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.

## **8.16 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.

## 9 CONCLUSION

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Mura 1 (Pty) Ltd is proposing the development of the Mura PV Development between Loxton and Beaufort West in the Western and Northern Cape Provinces. This report is specific to the Mura 1 Solar PV Facility. The proposed Mura 1 Solar PV Facility which includes its access road is located between Loxton and Beaufort West in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape Province.

This BA 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 production and grid interconnection. The purpose of the proposed Mura 1 Solar PV Facility 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 EA.

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 BA 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 PV 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.



If you have any further enquiries, please feel free to contact:

WSP Group Africa (Pty) Ltd

Attention: Megan Govender

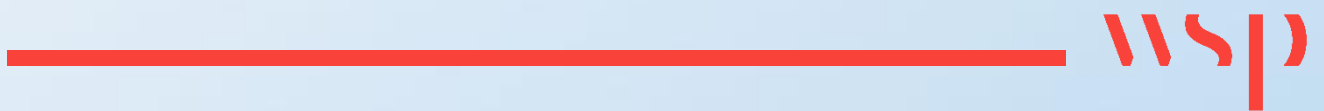
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# Appendix A

**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 project 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.

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#### *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 Brinckerhoff 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**

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## 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 Bontleg 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.



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

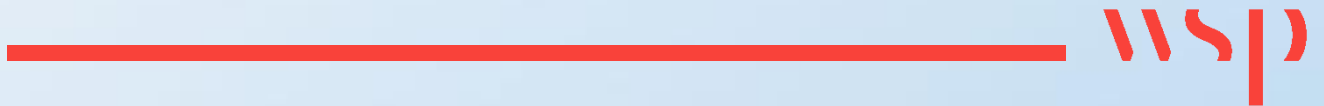
Chairperson

Registrar



# Appendix B

## **EAP DECLARATION OF INTEREST AND OATH UNDERTAKING**



**APPENDIX 10  
DECLARATION OF THE EAP**

I, Ashlea Strong, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

**Disclosure of Vested Interest (delete whichever is not applicable)**

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Signature of the environmental assessment practitioner

WSP Group Africa (Pty) Ltd

Name of company:

09/02/2023

Date



APPENDIX 12  
UNDERTAKING UNDER OATH/ AFFIRMATION

I, Ashlea Strong, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



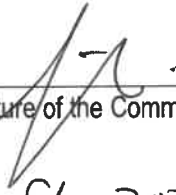
Signature of the Environmental Assessment Practitioner

WSP Group Africa (Pty) Ltd

Name of Company

09/02/2023

Date

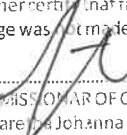


Signature of the Commissioner of Oaths

9 Feb 2023

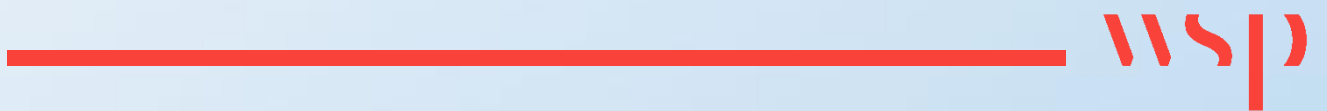
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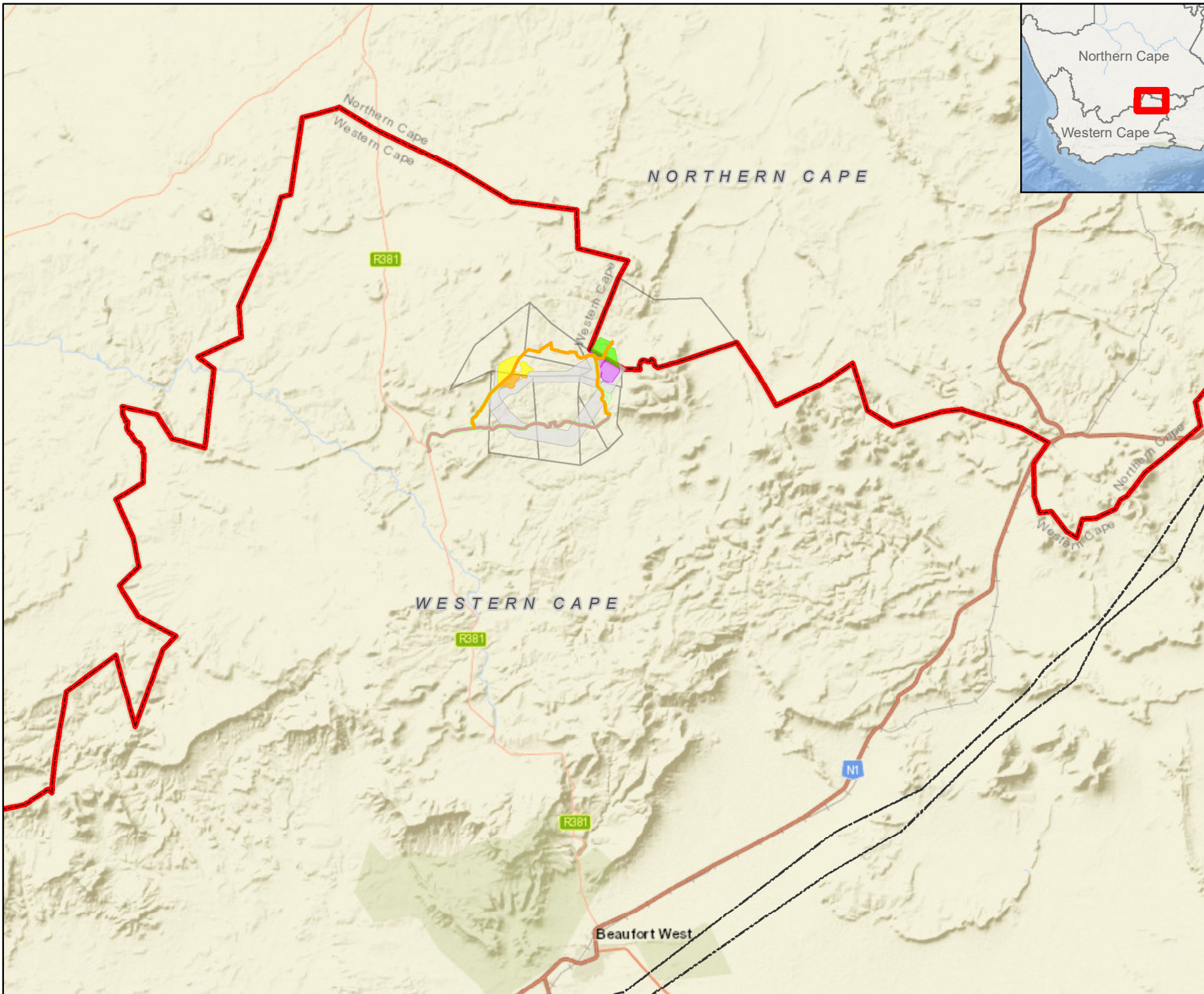
I certify that this document is a true representation (copy) of the original which was handed to me for authentication.  
I further certify that from my observation an amendment or change was not made to the original document.

 Date 9 Feb 2023  
COMMISSIONER OF OATHS REF: 9/1/8/2 Pretoria  
Margaretha Johanna Kotze 2007/08/29  
Facilities Manager  
Building 1, Magwa Office Park, Waterfall City, Midrand

# Appendix C

**MAPS**



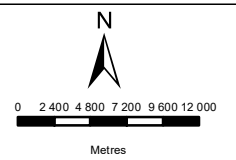


# REDCAP MURA

LOCALITY

## Legend

- District Road
- Existing Roads
- Access Roads
- Mura EGI Corridor
- Mura Solar 1
- Mura Solar 2
- Mura Solar 3
- Mura Solar 4
- Provincial Boundary
- Eskom Powerlines
- Farm Boundaries



**DISCLAIMER**  
 The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.



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**DATA SOURCE:**  
 Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)

**COORDINATE SYSTEM:** HARTEBEESTHOEK94 LO23

**PROJECT TITLE:**  
 REDCAP NUWEVELD PV CLUSTER


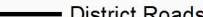
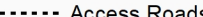
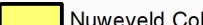
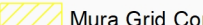
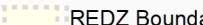
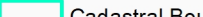


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**DATE:** 2023/02/02      **REVIEWED BY:** MG


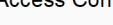
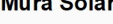
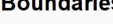
**FIGURE NO:**      **PROJECT NO:** 41103930      **REV:**

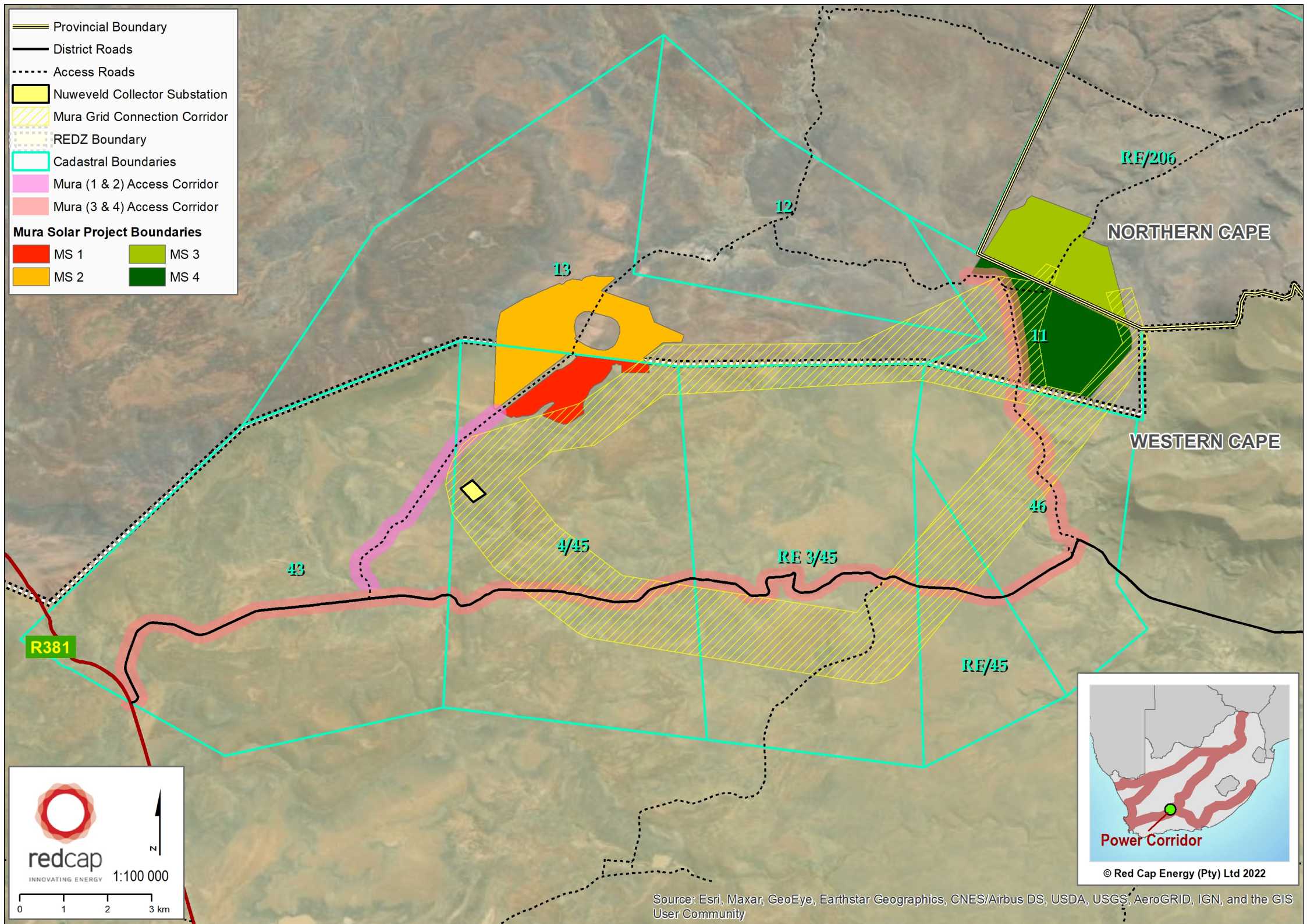

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-  Provincial Boundary
-  District Roads
-  Access Roads
-  Nuweveld Collector Substation
-  Mura Grid Connection Corridor
-  REDZ Boundary
-  Cadastral Boundaries
-  Mura (1 & 2) Access Corridor
-  Mura (3 & 4) Access Corridor

**Mura Solar Project Boundaries**

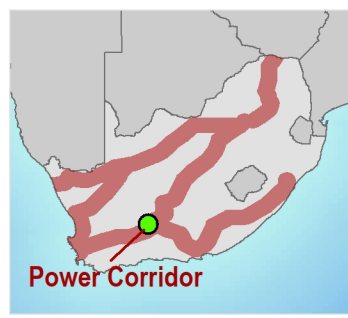
 MS 1	 MS 3
 MS 2	 MS 4

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INNOVATING ENERGY

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0 1 2 3 km



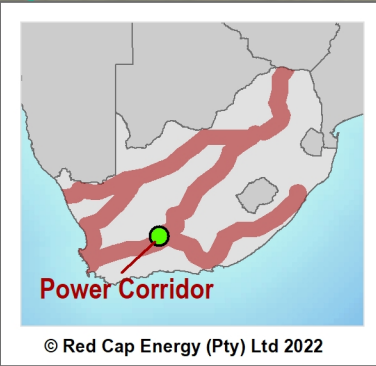
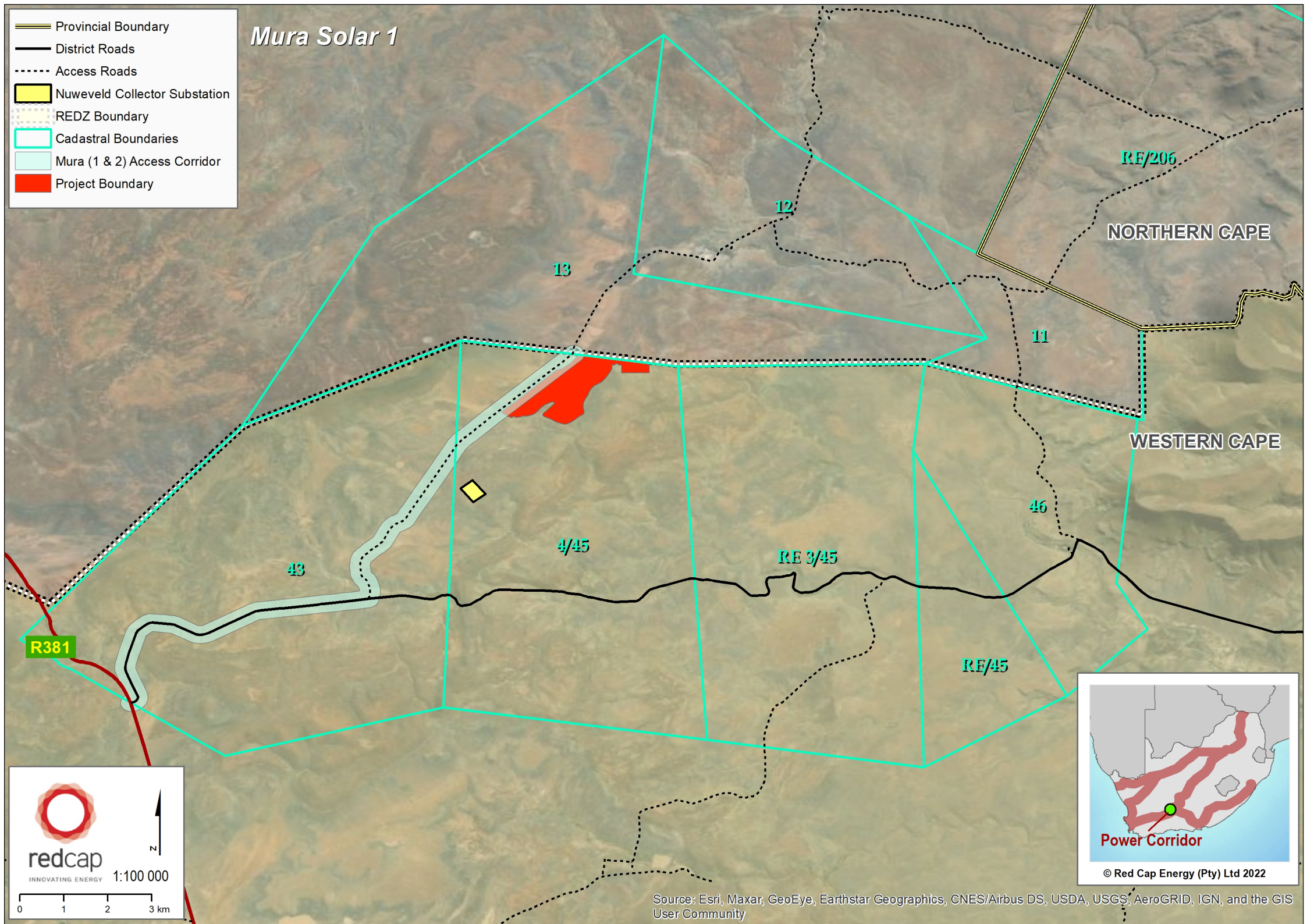
**Power Corridor**

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# Mura Solar 1

- Provincial Boundary
- District Roads
- Access Roads
- Nuweveld Collector Substation
- REDZ Boundary
- Cadastral Boundaries
- Mura (1 & 2) Access Corridor
- Project Boundary



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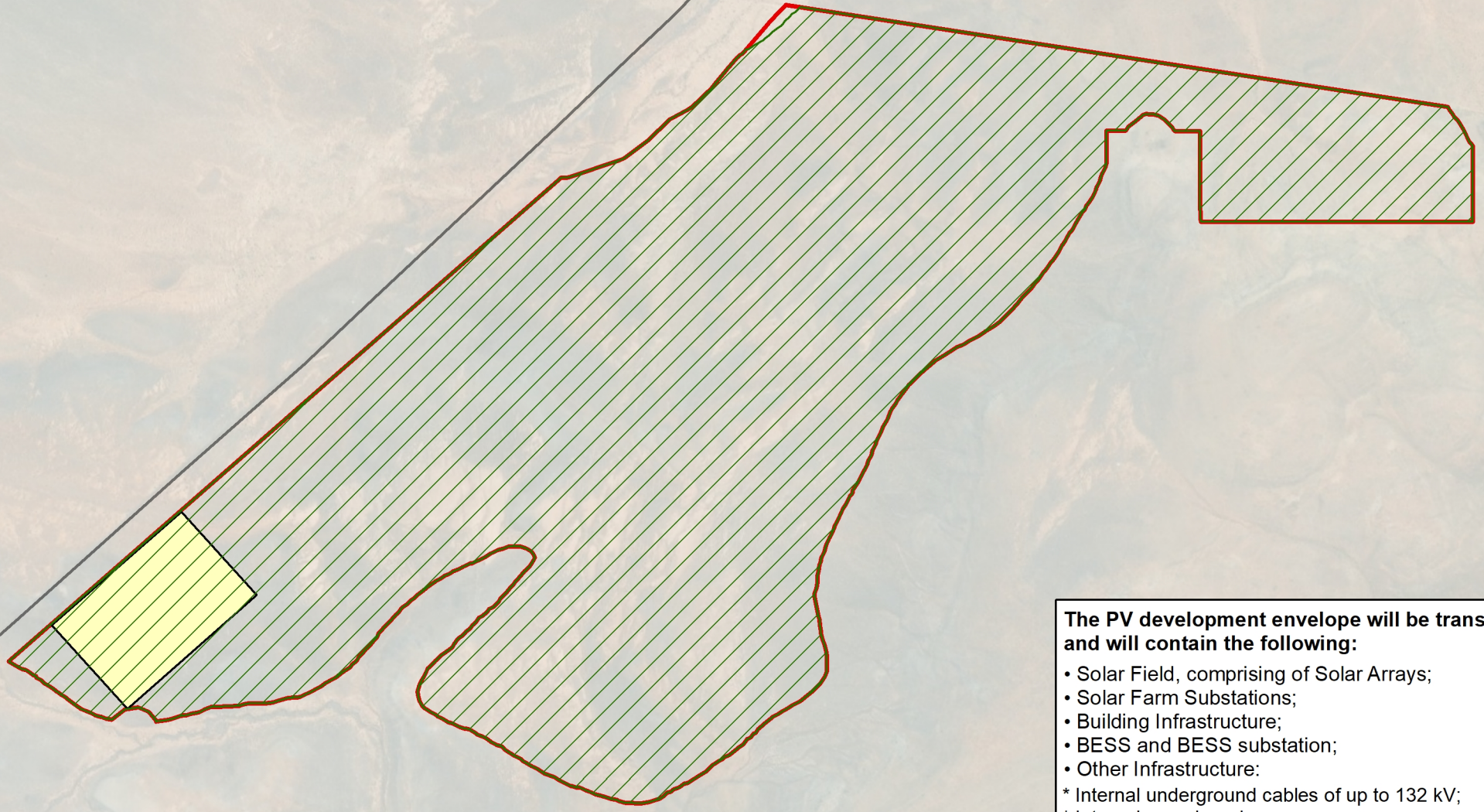
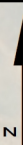
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0 1 2 3 km

N

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**The PV development envelope will be transformed and will contain the following:**

- Solar Field, comprising of Solar Arrays;
- Solar Farm Substations;
- Building Infrastructure;
- BESS and BESS substation;
- Other Infrastructure:





- \* Internal underground cables of up to 132 kV;
- \* Internal gravel roads;
- \* Fencing (between 2 – 3 m high) around the PV Facility;
- \* Panel maintenance and cleaning area;
- \* Storm water management system; and
- \* Construction site camps.



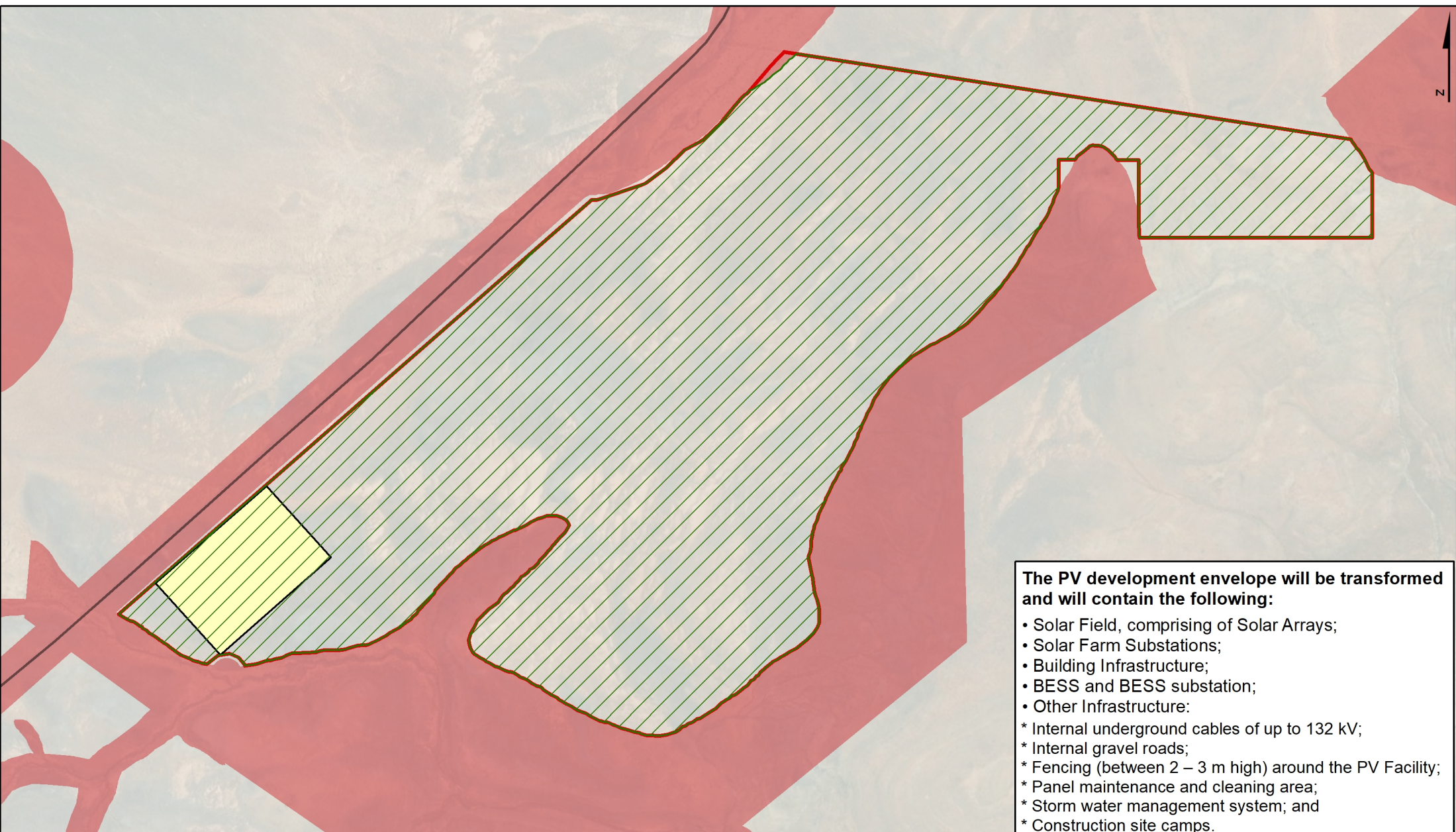
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Mura 1  
 PV Layout Schematic  
 1:11 500

*The data provided in this representation are provided for informational and planning purposes only. Red Cap is not responsible for the misuse or misrepresentation of the data.*

-  Existing Access Road
-  PV Development Envelope
-  Preliminary areas for substations, switching stations (assessed separately) and BESS
-  Site Boundary





**The PV development envelope will be transformed and will contain the following:**

- Solar Field, comprising of Solar Arrays;
- Solar Farm Substations;
- Building Infrastructure;
- BESS and BESS substation;
- Other Infrastructure:
- \* Internal underground cables of up to 132 kV;
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




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## Mura 1 PV Sensitivity & Layout Schematic

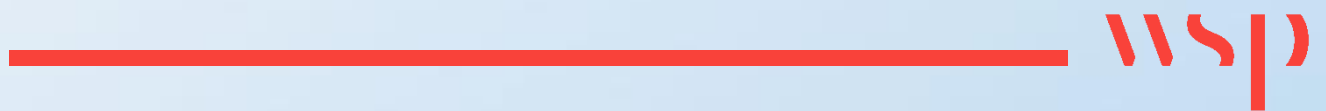
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*The data provided in this representation are provided for informational and planning purposes only. Red Cap is not responsible for the misuse or misrepresentation of the data.*

	Existing Access Road
	PV Development Envelope
	Preliminary areas for substations, switching stations (assessed separately) and BESS
	PV Nogo
	Site Boundary

# Appendix D

## **SUBSTATION GENERIC EMPR**





# GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

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**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

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## INTRODUCTION

### 1. Background

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

### 2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and all listed and specified activities necessary for the realisation of such infrastructure.

### 3. Objective

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

### 4. Scope

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

### 5. Structure of this document

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

Part	Section	Heading	Content
A		Provides general guidance and information	Definitions, acronyms, roles & responsibilities and documentation and reporting.

Part	Section	Heading	Content
		and is <b>not legally binding</b>	
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words “not applicable” can be inserted in the template under the “responsible persons” column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template <b>is not required</b> to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	<p>Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are <b>legally binding</b>. The preliminary infrastructure layout must be</p>

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



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

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

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

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

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

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

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

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

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

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

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

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features and within 50 m from the development footprint.

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

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

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

## PART A – GENERAL INFORMATION

### 1. DEFINITIONS

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

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

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

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

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

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

The method statement must cover as a minimum applicable details with regard to:

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

“**slope**” means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“**solid waste**” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“**spoil**” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“**topsoil**” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

“**works**” means the works to be executed in terms of the Contract

## 2. ACRONYMS and ABBREVIATIONS

<b>CA</b>	Competent Authority
<b>cEO</b>	Contractors Environmental Officer
<b>dEO</b>	Developer Environmental Officer
<b>DPM</b>	Developer Project Manager
<b>DSS</b>	Developer Site Supervisor
<b>EAR</b>	Environmental Audit Report
<b>ECA</b>	Environmental Conservation Act No. 73 of 1989
<b>ECO</b>	Environmental Control Officer
<b>EA</b>	Environmental Authorisation
<b>EIA</b>	Environmental Impact Assessment
<b>ERAP</b>	Emergency Response Action Plan
<b>EMPr</b>	Environmental Management Programme Report
<b>EAP</b>	Environmental Assessment Practitioner
<b>FPA</b>	Fire Protection Agency
<b>HCS</b>	Hazardous chemical Substance
<b>NEMA</b>	National Environmental Management Act, 1998 (Act No. 107 of 1998)
<b>NEMBA</b>	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
<b>NEMWA</b>	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
<b>MSDS</b>	Material Safety Data Sheet
<b>RI&amp;AP's</b>	Registered Interested and affected parties

### 3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

**Table 1:** Guide to roles and responsibilities for implementation of an EMPr

Responsible Person(s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u></p> <p>The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> <li>- Be fully conversant with the conditions of the EA;</li> <li>- Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s);</li> <li>- Issuing of site instructions to the Contractor for corrective actions required;</li> <li>- Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and</li> <li>- Ensure that periodic environmental performance audits are undertaken on the project implementation.</li> </ul>
Developer Site Supervisor (DSS)	<p><u>Role</u></p> <p>The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS</p>

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

Responsible Person(s)	Role and Responsibilities
	<p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> <li>- Be aware of the findings and conclusions of all EA related to the development;</li> <li>- Be familiar with the recommendations and mitigation measures of this EMPr;</li> <li>- Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them;</li> <li>- Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required;</li> <li>- Educate the construction team about the management measures contained in the EMPr and environmental licenses;</li> <li>- Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective;</li> <li>- Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements;</li> <li>- In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses;</li> <li>- Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns;</li> <li>- Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr;</li> <li>- Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO);</li> <li>- Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken;</li> <li>- Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken;</li> <li>- Assisting in the resolution of conflicts;</li> <li>- Facilitate training for all personnel on the site – this may range from carrying out the training, to</li> </ul>



Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> <li>- reviewing the training programmes of the Contractor;</li> <li>- In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance;</li> <li>- Maintenance, update and review of the EMPr;</li> <li>- Communication of all modifications to the EMPr to the relevant stakeholders.</li> </ul>
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> <li>- Be fully conversant with the EMPr;</li> <li>- Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;</li> <li>- Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ;</li> <li>- Confine the development site to the demarcated area;</li> <li>- Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO);</li> <li>- Assist the contractors in addressing environmental challenges on site;</li> <li>- Assist in incident management;</li> <li>- Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared;</li> <li>- Assist the contractor in investigating environmental incidents and compile investigation reports;</li> <li>- Follow-up on pre-warnings, defects, non-conformance reports;</li> <li>- Measure and communicate environmental performance to the Contractor;</li> <li>- Conduct environmental awareness training on site together with ECO and cEO;</li> </ul>

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> <li>- Ensure that the necessary legal permits and / or licenses are in place and up to date;</li> <li>- Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;</li> </ul>
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> <li>- project delivery and quality control for the development services as per appointment;</li> <li>- employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period;</li> <li>- ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely;</li> <li>- attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones;</li> <li>- ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.</li> </ul>
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors,</p>

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

#### 4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all substation infrastructure projects as a minimum requirement.

##### 4.1 Document control/Filing system

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

##### 4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

##### 4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

#### 4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

#### 4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

#### 4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

#### 4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression

of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

#### 4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

#### 4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and
14. Include relevant photographs in the Final Environmental Audit Report.



#### 4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

#### 4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in **(section 4.10)** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

#### 4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous at all times;

#### 4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The ECOs must prepare a monthly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

#### 4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

## **PART B: SECTION 1: Pre-approved generic EMPr template**

### **5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS**

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

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

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

### 5.1 Environmental awareness training

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

<ul style="list-style-type: none"> <li>d) Emergency procedures;</li> <li>e) Procedures to be followed when working near or within sensitive areas;</li> <li>f) Wastewater management procedures;</li> <li>g) Water usage and conservation;</li> <li>h) Solid waste management procedures;</li> <li>i) Sanitation procedures;</li> <li>j) Fire prevention; and</li> <li>k) Disease prevention.</li> </ul> <ul style="list-style-type: none"> <li>– A record of all environmental awareness training courses undertaken as part of the EMPr must be available;</li> <li>– Educate workers on the dangers of open and/or unattended fires;</li> <li>– A staff attendance register of all staff to have received environmental awareness training must be available.</li> <li>– Course material must be available and presented in appropriate languages that all staff can understand.</li> </ul>						
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**5.2 Site Establishment development**

<p>Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>– A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including</li> </ul>						

<p>but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;</p> <ul style="list-style-type: none"> <li>- Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through;</li> <li>- Sites must be located where possible on previously disturbed areas;</li> <li>- The camp must be fenced in accordance with <b>Section 5.5: Fencing and gate installation</b>; and</li> <li>- The use of existing accommodation for contractor staff, where possible, is encouraged.</li> </ul>						
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### 5.3 Access restricted areas

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

<ul style="list-style-type: none"> <li>– Unauthorised access and development related activity inside access restricted areas is prohibited.</li> </ul>						
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#### 5.4 Access roads

<b>Impact management outcome:</b> Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
<b>Impact Management Actions</b>	<b>Implementation</b>			<b>Monitoring</b>		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>– An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities;</li> <li>– All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition</li> <li>– All contractors must be made aware of all these access routes.</li> <li>– Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;</li> <li>– Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads;</li> <li>– In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with <b>section 4.9: photographic record</b>; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor;</li> <li>– Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or</li> </ul>						



croplands – Access roads must only be developed on a pre-planned and approved roads.						
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### 5.5 Fencing and Gate installation

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

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

<p>good working order for the duration of the development activities;</p> <ul style="list-style-type: none"> <li>- Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable;</li> <li>- Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner.</li> <li>- All fencing must be developed of high quality material bearing the SABS mark;</li> <li>- The use of razor wire as fencing must be avoided;</li> <li>- Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times;</li> <li>- On completion of the development phase all temporary fences are to be removed;</li> <li>- The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.</li> </ul>						
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### 5.6 Water Supply Management

<b>Impact management outcome:</b> Undertake responsible water usage.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis;</li> <li>- The Contractor must ensure the following: <ul style="list-style-type: none"> <li>a. The vehicle abstracting water from a river does not</li> </ul> </li> </ul>						

<p>enter or cross it and does not operate from within the river;</p> <p>b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and</p> <p>c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.</p> <p>– Ensure water conservation is being practiced by:</p> <p>a. Minimising water use during cleaning of equipment;</p> <p>b. Undertaking regular audits of water systems; and</p> <p>c. Including a discussion on water usage and conservation during environmental awareness training.</p> <p>d. The use of grey water is encouraged.</p>						
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### 5.7 Storm and waste water management

<p><b>Impact management outcome:</b> Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>– Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager;</p> <p>– All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility;</p> <p>– Natural storm water runoff not contaminated during the</p>						

<p>development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <ul style="list-style-type: none"> <li>- Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.</li> </ul>						
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### 5.8 Solid and hazardous waste management

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

<ul style="list-style-type: none"> <li>- General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company;</li> <li>- Hazardous waste must be disposed of at a registered waste disposal site;</li> <li>- Certificates of safe disposal for general, hazardous and recycled waste must be maintained.</li> </ul>						
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**5.9 Protection of watercourses and estuaries**

<b>Impact management outcome:</b> Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities;</li> <li>- In the event of a spill, prompt action must be taken to clear the polluted or affected areas;</li> <li>- Where possible, no development equipment must traverse any seasonal or permanent wetland</li> <li>- No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur;</li> <li>- Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available;</li> <li>- There must not be any impact on the long term morphological dynamics of watercourses or estuaries;</li> <li>- Existing crossing points must be favored over the creation of</li> </ul>						

<p>new crossings (including temporary access)</p> <ul style="list-style-type: none"> <li>- When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> <li>a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse</li> <li>b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained;</li> <li>c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and</li> <li>d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.</li> </ul> </li> </ul>						
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### 5.10 Vegetation clearing

<p><b>Impact management outcome:</b> Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p><b>General:</b></p> <ul style="list-style-type: none"> <li>- Indigenous vegetation which does not interfere with the development must be left undisturbed;</li> <li>- Protected or endangered species may occur on or near the</li> </ul>						

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

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

### 5.12 Protection of heritage resources

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

### 5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.;</li> </ul>						

<ul style="list-style-type: none"> <li>- All unattended open excavations must be adequately fenced or demarcated;</li> <li>- Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;</li> <li>- Ensure structures vulnerable to high winds are secured;</li> <li>- Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.</li> </ul>						
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#### 5.14 Sanitation

**Impact management outcome:** Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Mobile chemical toilets are installed onsite if no other ablution facilities are available;</li> <li>- The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances;</li> <li>- Where mobile chemical toilets are required, the following must be ensured:               <ul style="list-style-type: none"> <li>a) Toilets are located no closer than 100 m to any watercourse or water body;</li> <li>b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause;</li> <li>c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance</li> </ul> </li> </ul>						

<p>with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; – A copy of the waste disposal certificates must be maintained.</p>						
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### 5.15 Prevention of disease

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

Services.						
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### 5.16 Emergency procedures

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

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

### 5.17 Hazardous substances

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives</li> </ul>						

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

Impact management outcome: Soil, surface water and groundwater contamination is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;</li> <li>- 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;</li> <li>- Leaking equipment must be repaired immediately or be removed from site to facilitate repair;</li> <li>- Workshop areas must be monitored for oil and fuel spills;</li> <li>- Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;</li> <li>- 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;</li> <li>- Water drainage from the workshop must be contained and managed in accordance Section <b>5.7: Storm and waste water management</b>.</li> </ul>						

**5.19 Batching plants**

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Concrete mixing must be carried out on an impermeable surface;</li> <li>- Batching plants areas must be fitted with a containment facility for the collection of cement laden water.</li> <li>- Dirty water from the batching plant must be contained to prevent soil and groundwater contamination</li> <li>- Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;</li> <li>- A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;</li> <li>- Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility;</li> <li>- Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;</li> <li>- Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <b>Section 5.20: Dust emissions</b>)</li> <li>- Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility;</li> <li>- Temporary fencing must be erected around batching plants in accordance with Section <b>5.5: Fencing and gate</b></li> </ul>						

<i>installation.</i>						
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### 5.20 Dust emissions

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;</li> <li>- Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible;</li> <li>- Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;</li> <li>- During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level;</li> <li>- Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;</li> <li>- Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;</li> <li>- Vehicle speeds must not exceed 40 km/h along dust roads</li> </ul>						

<p>or 20 km/h when traversing unconsolidated and non-vegetated areas;</p> <ul style="list-style-type: none"> <li>- Straw stabilisation must be applied at a rate of one bale/10 m<sup>2</sup> and harrowed into the top 100 mm of top material, for all completed earthworks;</li> <li>- For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.</li> </ul>						
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### 5.21 Blasting

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

### 5.22 Noise

<p><b>Impact Management outcome:</b> Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for</li> </ul>						

<p>communication and emergency only;</p> <ul style="list-style-type: none"> <li>- All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;</li> <li>- Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers;</li> <li>- Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.</li> </ul>						
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### 5.23 Fire prevention

<b>Impact management outcome:</b> Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Designate smoking areas where the fire hazard could be regarded as insignificant;</li> <li>- Firefighting equipment must be available on all vehicles located on site;</li> <li>- The local Fire Protection Agency (FPA) must be informed of construction activities;</li> <li>- Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;</li> </ul>						

- Two way swop of contact details between ECO and FPA.						
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#### 5.24 Stockpiling and stockpile areas

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

#### 5.25 Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.						
Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> <li>- Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone;</li> <li>- Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards;</li> <li>- Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;</li> <li>- These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;</li> <li>- Rehabilitation of the disturbed areas must be managed in accordance with <b>Section 5.35: Landscaping and rehabilitation</b>;</li> <li>- All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and</li> <li>- Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes.</li> </ul>						

**5.26 Excavation of foundation, cable trenching and drainage systems**

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
- All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a						



<p>licensed landfill site, if not used for backfilling purposes;</p> <ul style="list-style-type: none"> <li>– Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;</li> <li>– Management of equipment for excavation purposes must be undertaken in accordance with <b>Section 5.18: Workshop, equipment maintenance and storage</b>; and</li> <li>– Hazardous substances spills from equipment must be managed in accordance with <b>Section 5.17: Hazardous substances</b>.</li> </ul>						
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**5.27 Installation of foundations, cable trenching and drainage systems**

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

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

<p><b>Impact management outcome:</b> No environmental degradation occurs as a result of installation of equipment.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> <li>- Management of dust must be conducted in accordance with Section <b>5. 20: Dust emissions</b>;</li> <li>- Management of equipment used for installation must be conducted in accordance with Section <b>5.18: Workshop, equipment maintenance and storage</b>;</li> <li>- Management hazardous substances and any associated spills must be conducted in accordance with Section <b>5.17: Hazardous substances</b>; and</li> <li>- Residual solid waste must be recycled or disposed of in accordance with <b>Section 5.8: Solid waste and hazardous management</b>.</li> </ul>						
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### 5.29 Steelwork Assembly and Erection

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

### 5.30 Cabling and Stringing

<b>Impact management outcome:</b> No environmental degradation occurs as a result of stringing.		
Impact Management Actions	Implementation	Monitoring

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with <b>Section 6.8: Solid waste and hazardous Management;</b></li> <li>- Management of equipment used for installation shall be conducted in accordance with <b>Section 5.18: Workshop, equipment maintenance and storage;</b></li> <li>- Management hazardous substances and any associated spills shall be conducted in accordance with <b>Section 5.17: Hazardous substances.</b></li> </ul>						

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

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

**5.32 Socio-economic**

<b>Impact management outcome:</b> enhanced socio-economic development.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> <li>- Develop and implement communication strategies to facilitate public participation;</li> <li>- Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;</li> <li>- Sustain continuous communication and liaison with neighboring owners and residents</li> <li>- Create work and training opportunities for local stakeholders; and</li> <li>- Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers.</li> </ul>						
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### 5.33 Temporary closure of site

<b>Impact management outcome:</b> Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in <b>sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage</b>;</li> <li>- Hazardous storage areas must be well ventilated;</li> <li>- Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;</li> <li>- Emergency and contact details displayed must be displayed;</li> <li>- Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and</li> </ul>						

<p>emergency personnel;</p> <ul style="list-style-type: none"> <li>– Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;</li> <li>– Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.;</li> <li>– Structures vulnerable to high winds must be secured;</li> <li>– Wind and dust mitigation must be implemented;</li> <li>– Cement and materials stores must have been secured;</li> <li>– Toilets must have been emptied and secured;</li> <li>– Refuse bins must have been emptied and secured;</li> <li>– Drip trays must have been emptied and secured.</li> </ul>						
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#### 5.34 Dismantling of old equipment

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

<p>to prevent spillage and pollution of the environment;</p> <ul style="list-style-type: none"> <li>- The Contractor must also be equipped to contain and clean up any pollution causing spills; and</li> <li>- Disposal of unusable material must be at a licensed waste disposal site.</li> </ul>						
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### 5.35 Landscaping and rehabilitation

<p><b>Impact management outcome:</b> Areas disturbed during the development phase are returned to a state that approximates the original condition.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> <li>- All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site;</li> <li>- All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983</li> <li>- All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983;</li> <li>- Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition;</li> <li>- Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners;</li> <li>- Rehabilitation of access roads outside of farmland;</li> <li>- Indigenous species must be used for with species and/grasses to where it compliments or approximates the</li> </ul>						

<p>original condition;</p> <ul style="list-style-type: none"> <li>– Stockpiled topsoil must be used for rehabilitation (refer to <b>Section 5.24: Stockpiling and stockpiled areas</b>);</li> <li>– Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;</li> <li>– Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;</li> <li>– Subsoil must be ripped before topsoil is placed;</li> <li>– The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;</li> <li>– Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;</li> <li>– Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;</li> <li>– Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil.</li> <li>– Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> <li>a) Annual and perennial plants are chosen;</li> <li>b) Pioneer species are included;</li> <li>c) Species chosen must be indigenous to the area with the seeds used coming from the area;</li> <li>d) Root systems must have a binding effect on the soil;</li> <li>e) The final product must not cause an ecological imbalance in the area</li> </ul> </li> </ul>					
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## **6 ACCESS TO THE GENERIC EMPr**

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of Regulation 26(h) of the EIA Regulations.

**PART B: SECTION 2**

**7 SITE SPECIFIC INFORMATION AND DECLARATION**

**7.1 Sub-section 1: contact details and description of the project**

7.1.1 Details of the applicant:

Mura 1 (Pty) Ltd is the project proponent (Applicant) with regards to this application for the construction and operation of the Mura 1 Solar PV Facility.

<b>Proponent:</b>	Mura 1 (Pty) Ltd
<b>Contact Person:</b>	Lance Blaine
<b>Postal Address</b>	Unit B2, Mainstream Centre, Main Road Hout Bay, Cape Town
<b>Telephone:</b>	021 790 1392
<b>Email:</b>	<a href="mailto:surina@red-cap.co.za">surina@red-cap.co.za</a>

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA process for the proposed project. The CV of the EAP is available in Appendix A of the Site Specific EMPr. The EAP declaration of interest and undertaking is included in Appendix B of the Site Specific EMPr.

<b>EAP</b>	WSP Group Africa (PTY) Ltd
<b>Company Registration:</b>	1999/008928/07
<b>Contact Person:</b>	Ashlea Strong
<b>Physical Address:</b>	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
<b>Postal Address:</b>	P.O. Box 98867, Sloane Park 2151, Johannesburg
<b>Telephone:</b>	011 361 1392
<b>Fax:</b>	011 361 1381
<b>Email:</b>	Ashlea.Strong@wsp.com

<b>EAP Qualifications:</b>	<ul style="list-style-type: none"> <li>• Masters in Environmental Management, University of the Free State</li> <li>• B Tech, Nature Conservation, Technikon SA</li> <li>• National Diploma in Nature Conservation, Technikon SA</li> </ul>
<b>EAPASA Registration Number:</b>	EAPASA (2019/1005)

Refer to Section 1.2 of the EMPr

7.1.3 Project name:

**Mura 1 Solar Photovoltaic (PV) Facility**

7.1.4 Description of the project:

The proposed Mura 1 Solar PV Facility falls within the Beaufort West Renewable Energy Development Zones (REDZ) and will therefore be subject to a Basic Assessment (BA) Process in terms of NEMA (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017. The competent authority (CA) for this BA process is the national Department of Forestry, Fisheries and Environment (DFFE).

Red Cap Energy is proposing to develop four solar facilities, namely Mura 1, Mura 2, Mura 3, and Mura 4, and an associated grid connection, collectively known as the Mura PV Development between Loxton and Beaufort West. The proposed Mura PV Development is located in close proximity to the approved Nuweveld Wind Farm Development. The Mura PV Development falls partially within the Beaufort West REDZ.

Each solar facility will connect to the Eskom grid via new 132 kV overhead lines (assessed in a separate process to the PV facilities) connecting up to two on-site solar substations via an adjacent Eskom switching stations to the approved Nuweveld Collector Substation.

For the grid connection, an Electrical Grid Infrastructure (EGI) Corridor is proposed and is assessed as a separate project. The grid line is arranged in what is called a "collector ring line". This implies that it is a circular grid line and not just a single line between the Nuweveld Collector Substation and the Mura facilities. The use of a circular "collector ring line" is an approach used by Eskom and others to improve the grid stability and to ensure that if the grid line is damaged on one side of the "collector ring line", that the solar facilities can still export their energy along the other side of the ring line while the fault is repaired. This allows these facilities to be better integrated into the national grid and to better reduce risks of downtime which enables these solar facility projects to be better adapted to potential amendments to future bidding requirements or to potentially give them a competitive advantage over other similar projects.

7.1.5 Project location:

The proposed Mura 1 Solar PV Facility which includes its access road is located between Loxton and Beaufort West in the BWLM and the CKDM in the Western Cape Province. The proposed Mura 1 Facility will be developed within a project area of approximately 176 hectares (ha), excluding the access road corridor. The site will be accessed via the R381, DR02317 and existing access roads. The four solar PV facilities of the Mura Solar Development are located adjacent to each other and as such, the overall locality of the Mura Solar PV Development is included in Figure 1. The details of the property associated with the proposed Mura 1 PV Facility, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in Table-1. The co-ordinates of the cadastral land parcels are included in Table 2. The coordinates of the centre and outer corner points of the development area of the Mura 1 Solar PV Facility are provided in Table 3 and the access road corridor provided in Table 4 below.

**Table 1 – Mura 1 Solar PV Facility Affected Farm Portions**

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
Leeuwkloof Farm 43	C00900000000004300000
Portion 4 of Duiker Kranse Farm 45	C00900000000004500004

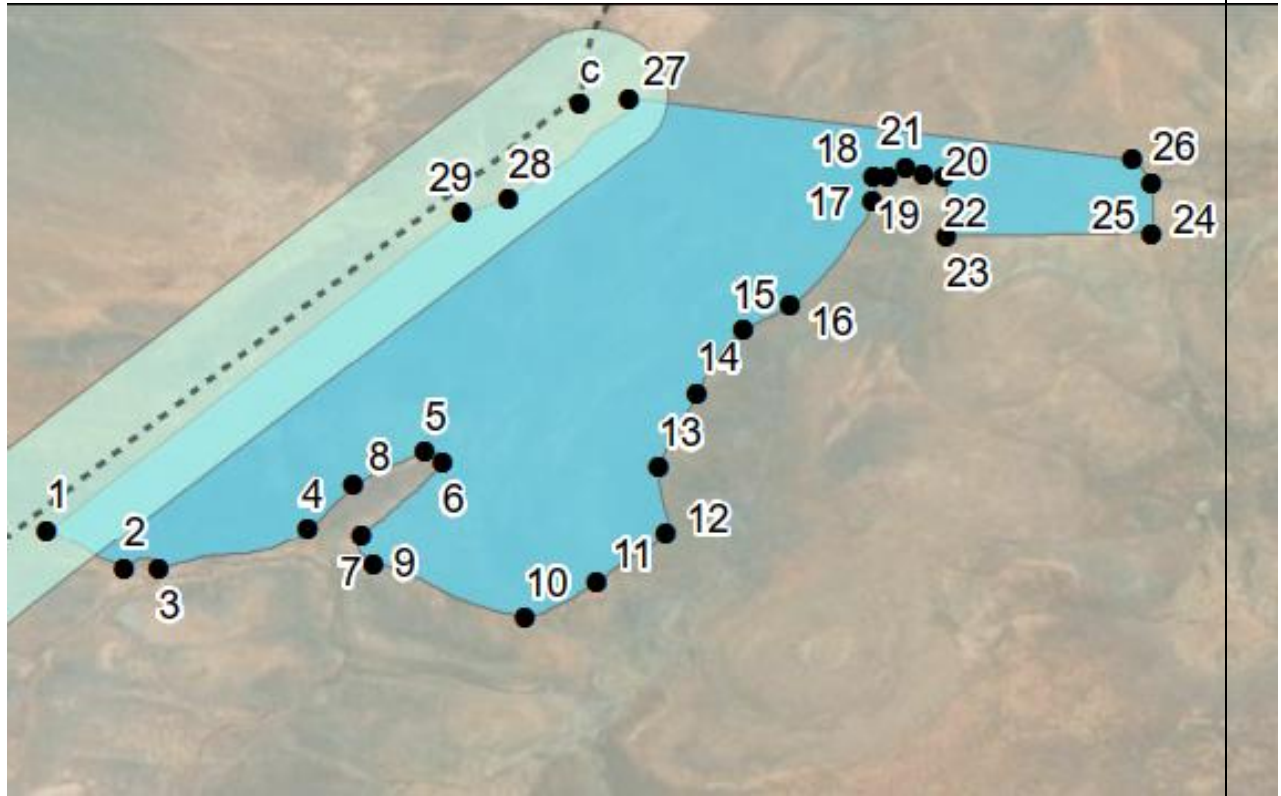
**Table 2 – Coordinate Points of the Cadastral Land Parcel**

Point	Longitude	Latitude
AF	22° 25' 30.549" E	31° 54' 31.383" S
AG	22° 23' 38.105" E	31° 53' 27.670" S
AH	22° 23' 27.895" E	31° 53' 24.545" S
AI	22° 22' 59.281" E	31° 53' 5.869" S
AJ	22° 23' 21.151" E	31° 52' 39.727" S
J	22° 25' 42.416" E	31° 50' 28.752" S
A	22° 28' 23.070" E	31° 49' 26.137" S
B	22° 31' 2.626" E	31° 49' 45.289" S
C	22° 31' 24.038" E	31° 54' 19.973" S

Point	Longitude	Latitude
D	22° 28' 9.966" E	31° 53' 55.928" S

**Table 3 – Mura 1 Solar PV Facility Coordinates**

Point	Longitude	Latitude
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**PV Development Area**

Centre Point	22°29'35.79"E	31°50'20.38"S
1	22° 28' 52.540" E	31° 50' 19.187" S
2	22° 29' 0.200" E	31° 50' 22.819" S
3	22° 29' 3.638" E	31° 50' 22.916" S
4	22° 29' 18.258" E	31° 50' 19.093" S
5	22° 29' 29.825" E	31° 50' 11.422" S
6	22° 29' 31.672" E	31° 50' 12.354" S
7	22° 29' 23.662" E	31° 50' 19.734" S
8	22° 29' 22.844" E	31° 50' 14.795" S

Point	Longitude	Latitude
9	22° 29' 24.756" E	31° 50' 22.351" S
10	22° 29' 39.743" E	31° 50' 27.704" S
11	22° 29' 46.860" E	31° 50' 24.331" S
12	22° 29' 53.635" E	31° 50' 19.450" S
13	22° 29' 52.998" E	31° 50' 13.002" S
14	22° 29' 56.695" E	31° 50' 5.618" S
15	22° 30' 1.350" E	31° 49' 59.344" S
16	22° 30' 5.864" E	31° 49' 56.960" S
17	22° 30' 14.076" E	31° 49' 46.729" S
18	22° 30' 14.166" E	31° 49' 44.350" S
19	22° 30' 15.592" E	31° 49' 44.335" S
20	22° 30' 19.141" E	31° 49' 44.170" S
21	22° 30' 17.363" E	31° 49' 43.241" S
22	22° 30' 21.161" E	31° 49' 44.270" S
23	22° 30' 21.305" E	31° 49' 50.074" S
24	22° 30' 41.652" E	31° 49' 49.832" S
25	22° 30' 41.573" E	31° 49' 44.954" S
26	22° 30' 39.665" E	31° 49' 42.532" S
27	22° 29' 49.977" E	31° 49' 36.602" S
28	22° 29' 38.054" E	31° 49' 46.520" S
29	22° 29' 33.526" E	31° 49' 47.820" S
<b>Preliminary areas for substations, switching stations and BESS</b>		
Centre Point	31°50'17.24"S	22°29'2.13"E



**Table 4 – Mura 1 and 2 Access Road Coordinates**

Point	Longitude	Latitude
a (Start)	22° 24' 20.311" E	31° 53' 52.717" S
b (Middle)	22° 27' 15.092" E	31° 52' 36.273" S
c (End)	22° 29' 45.190" E	31° 49' 37.042" S

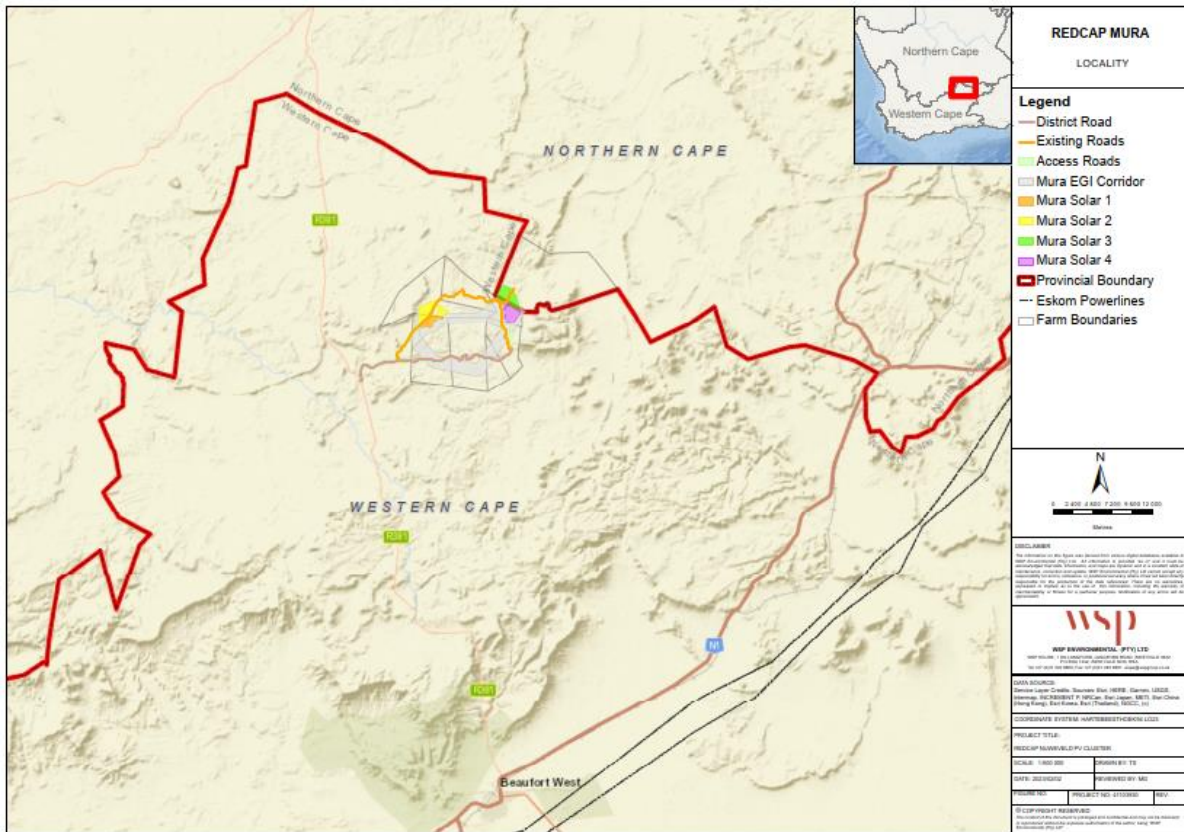


Figure 1: Regional locality map of Mura Solar PV Development

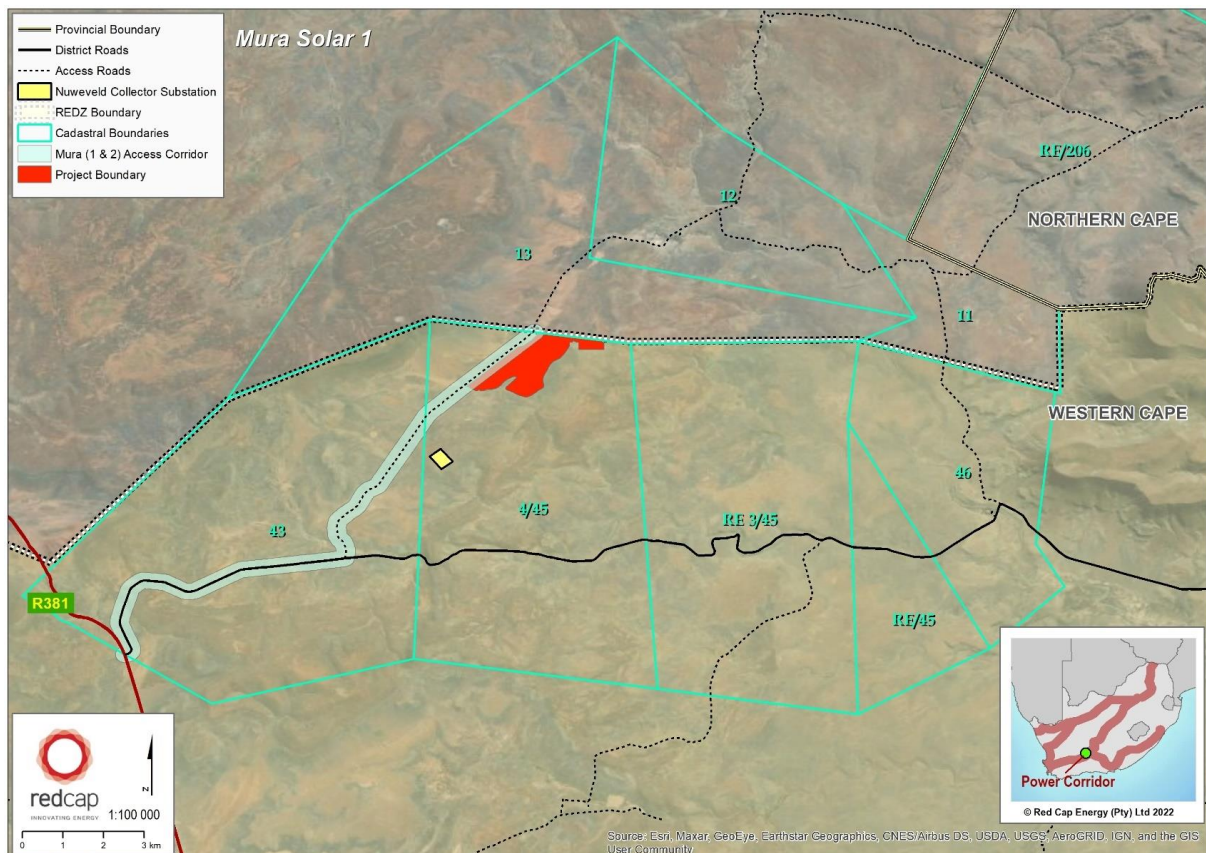


Figure 2: Mura 1 Solar PV Facility



### 7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.

Refer to Section 3 of the EMPr

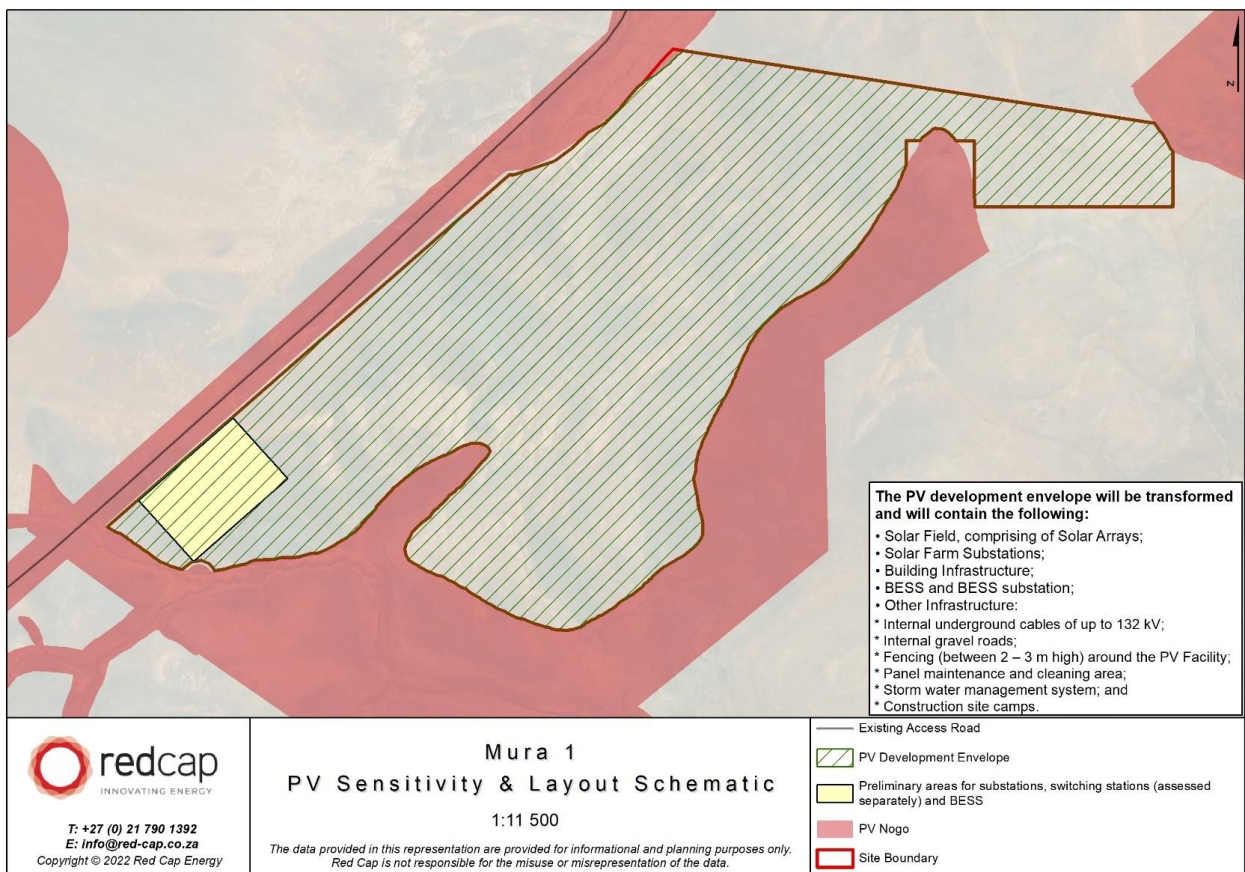


Figure 3: Combined No-Go Sensitivity Map and Proposed Development Envelope for Mura 1 PV Facility

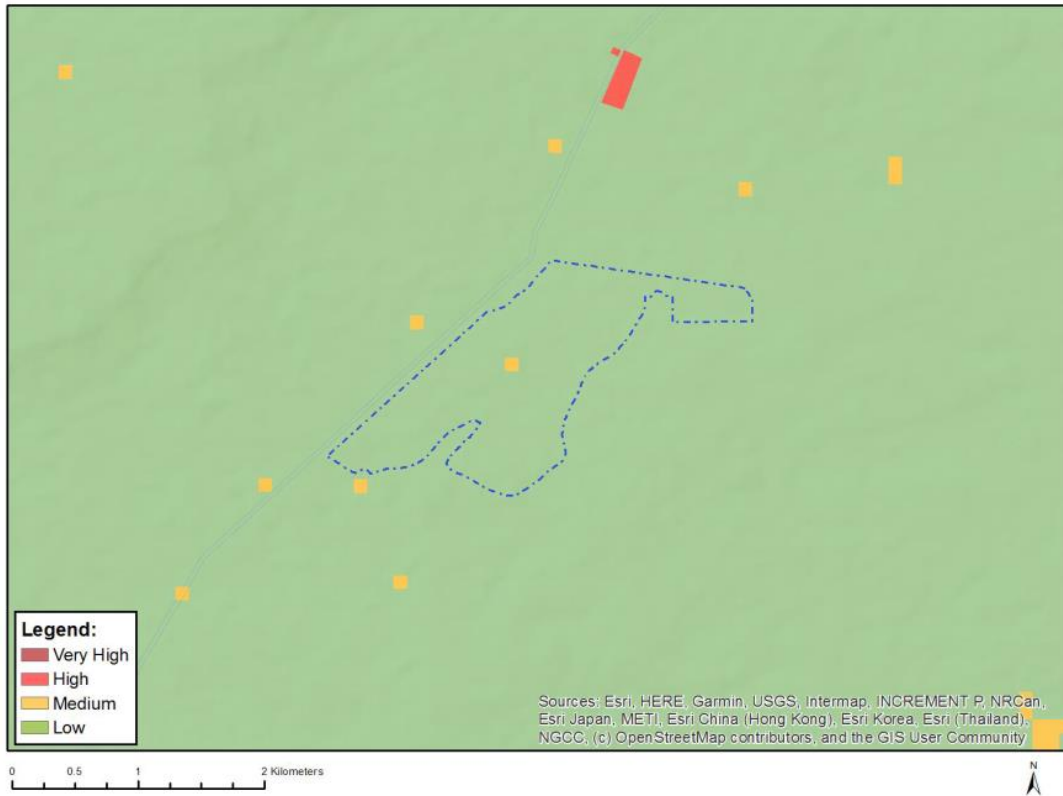


Figure 4: Map of Agriculture Sensitivity

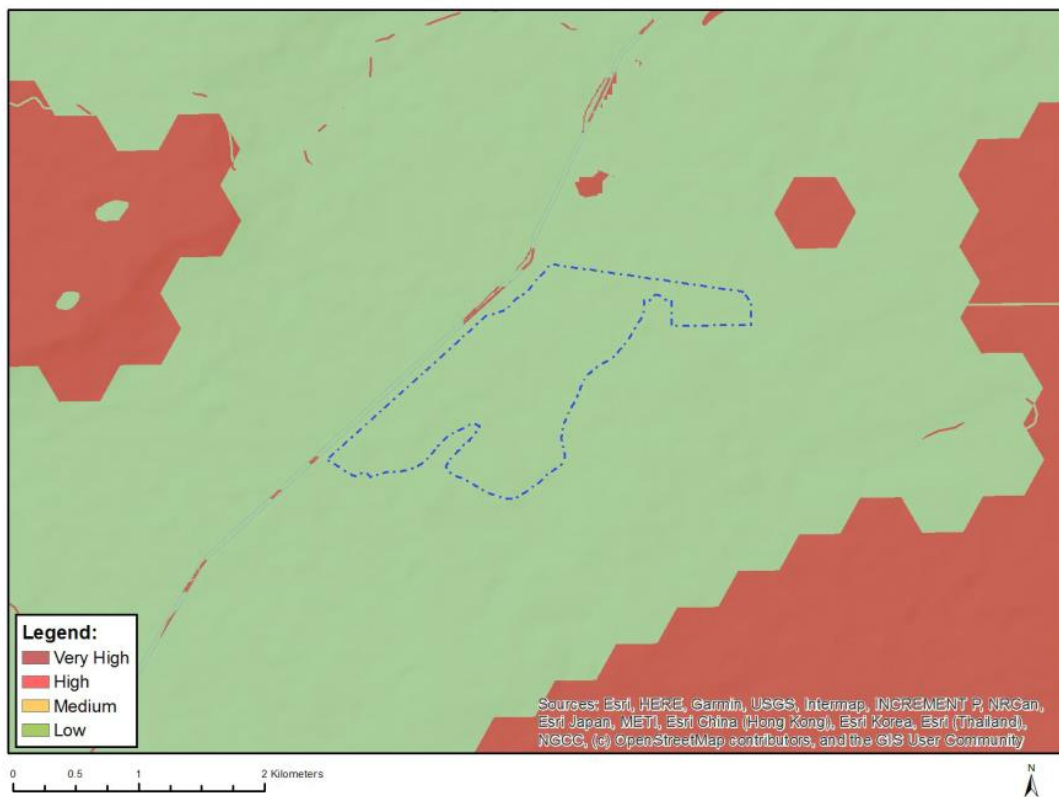


Figure 5: Map of Terrestrial Biodiversity Sensitivity

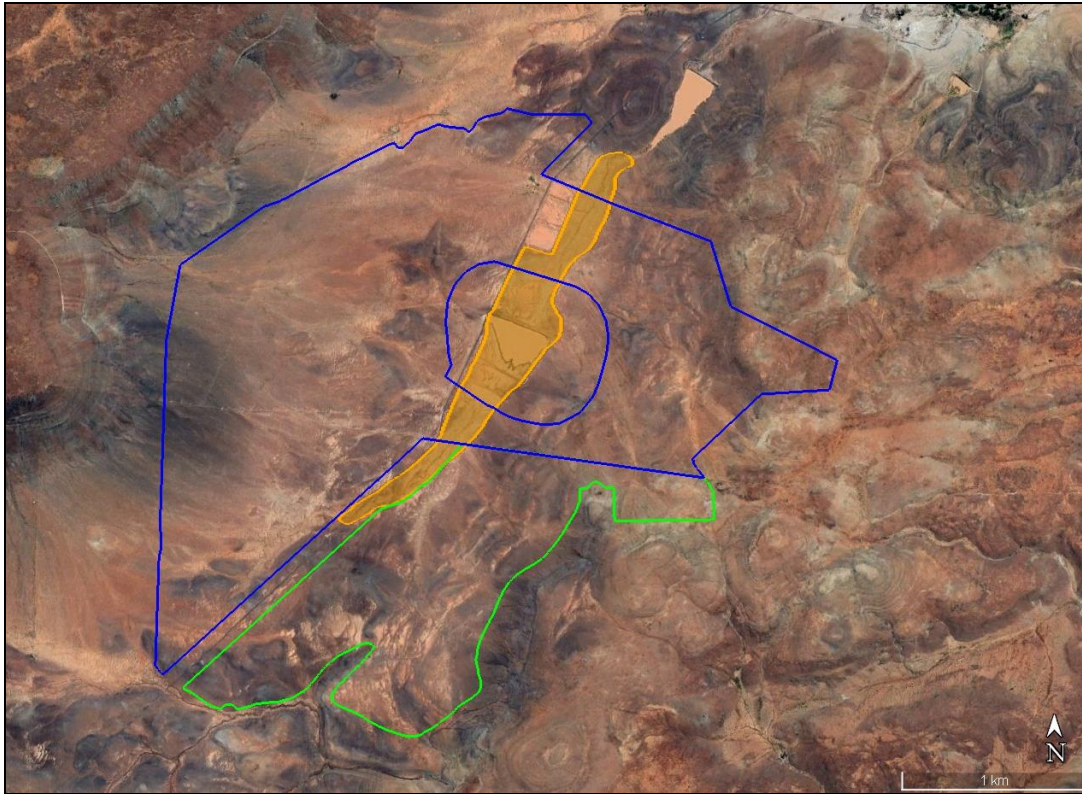


Figure 6: Sensitivity map for the Mura 1 and Mura 2 project areas, illustrating areas with habitats of higher sensitivity that should be avoided as much as possible by the development

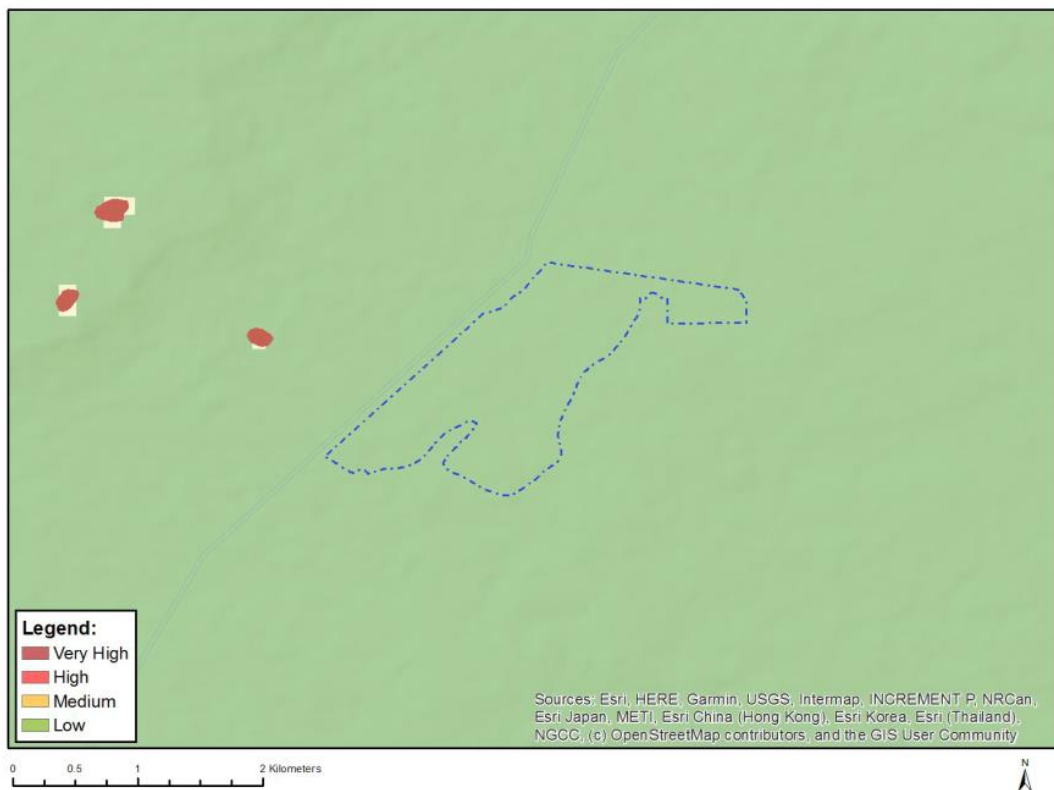


Figure 7: Map of Aquatic Biodiversity Sensitivity



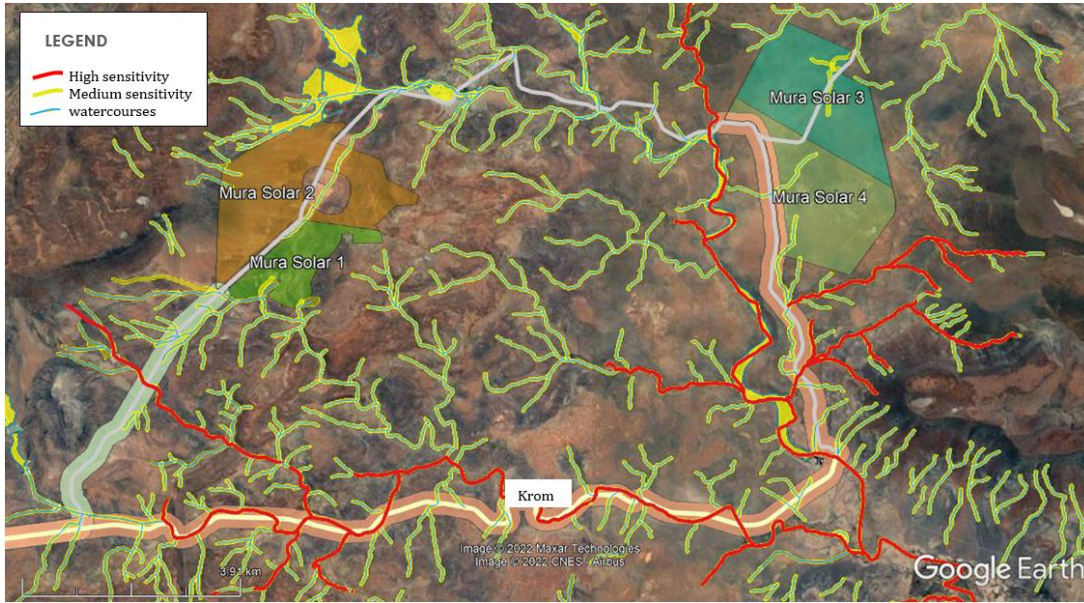


Figure 8: Recommended aquatic buffer/setback areas and associated aquatic ecosystem sensitivity mapping

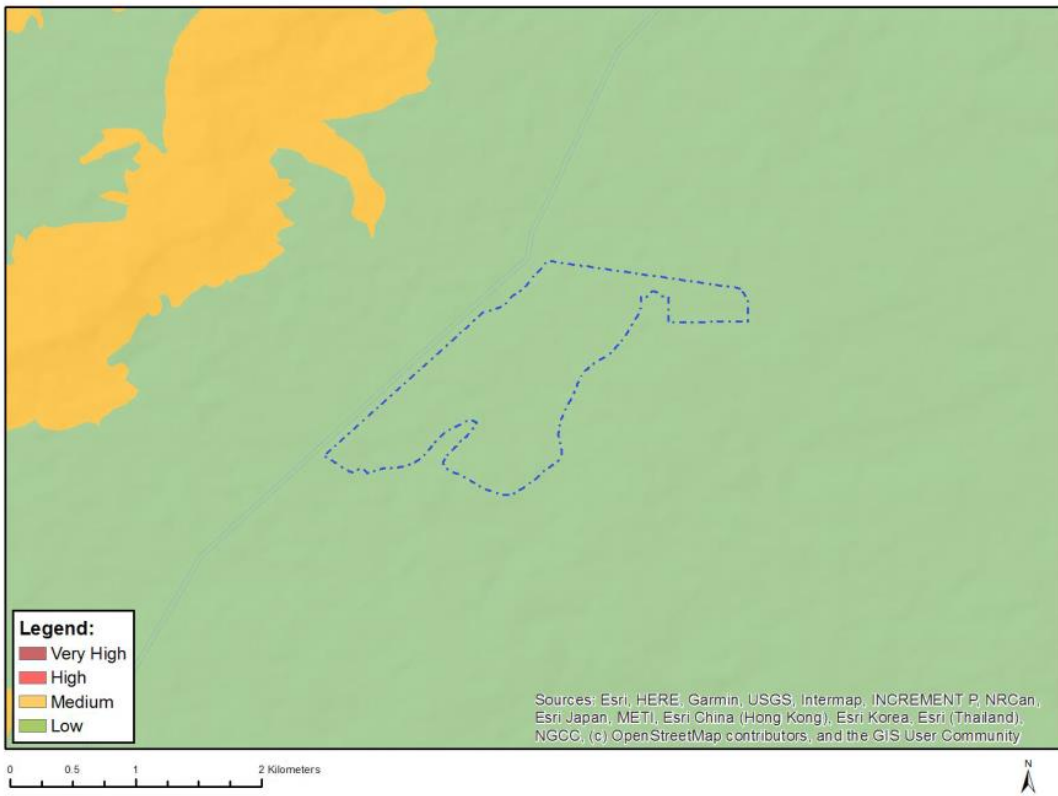


Figure 9: Map of Plant Species Sensitivity



Figure 10: Map of Animal Species Sensitivity

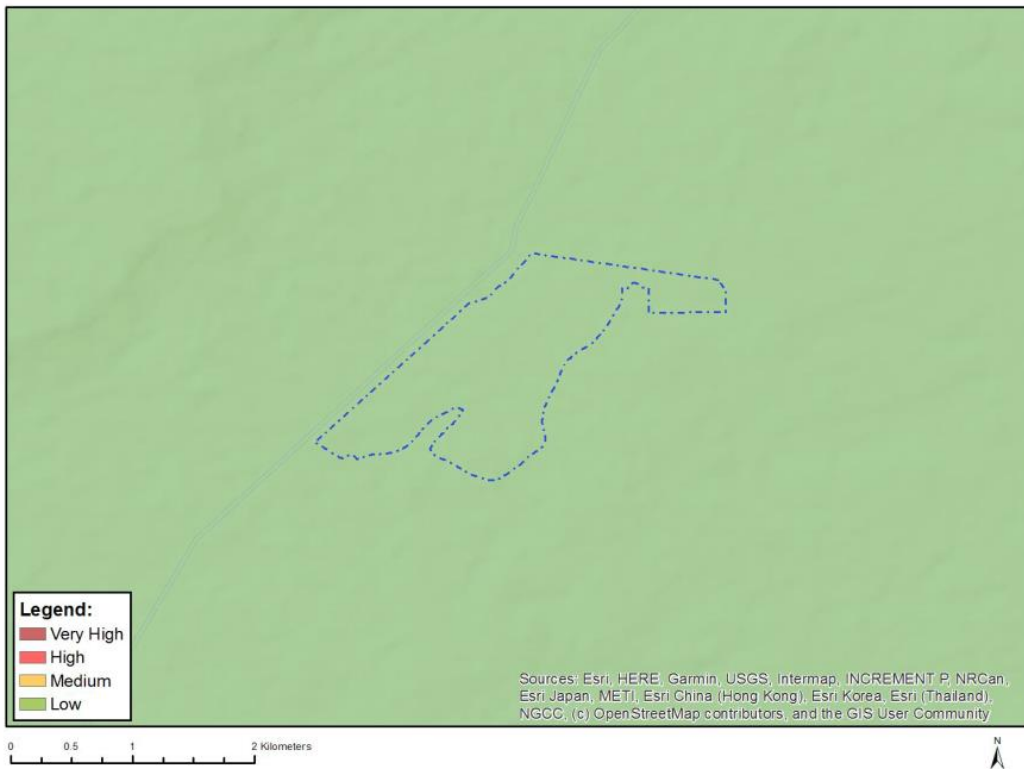


Figure 11: Map of Avian Sensitivity



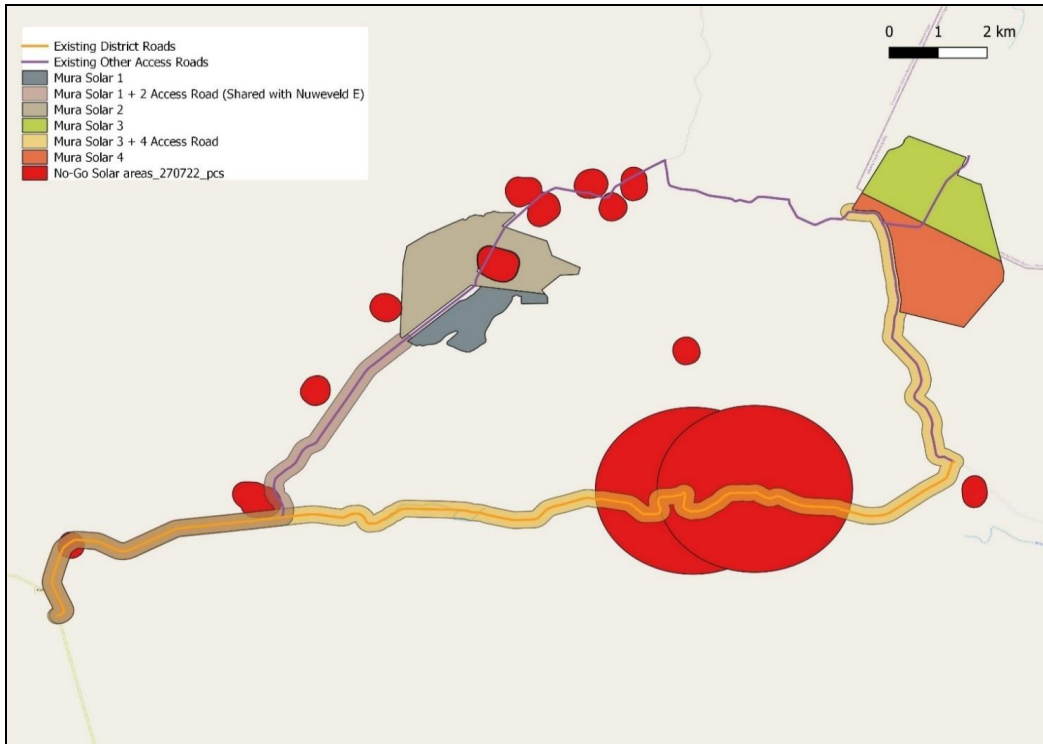


Figure 12: Avifaunal sensitivity of the overall PV site

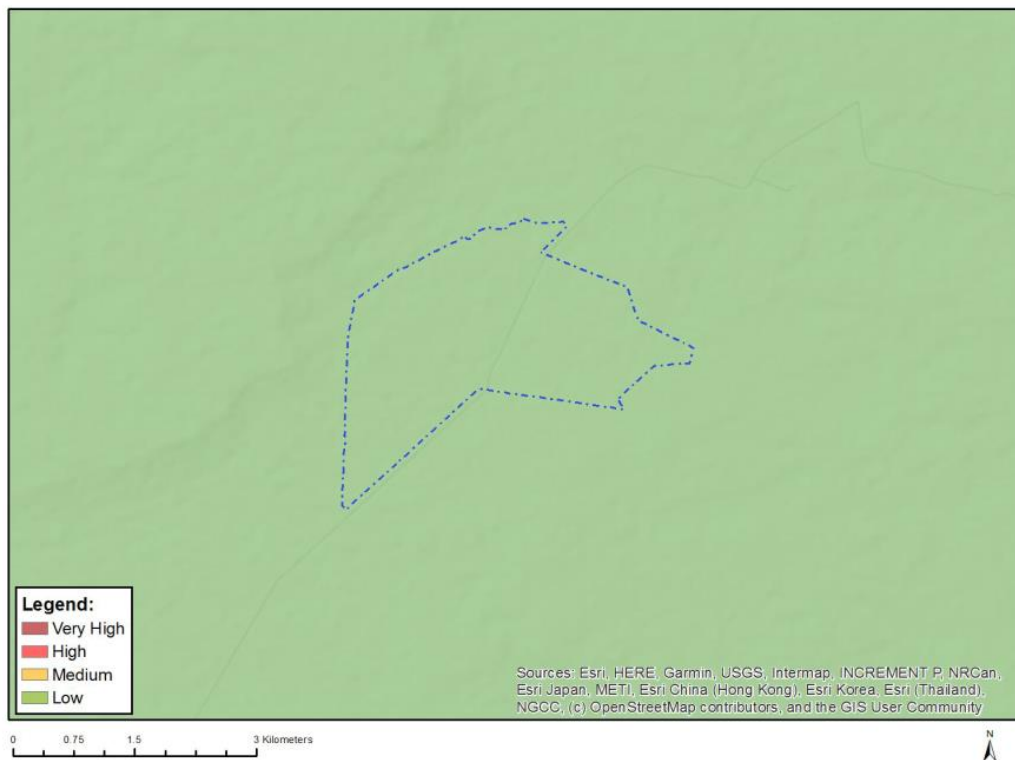


Figure 13: Map of Archaeological and Heritage Sensitivity

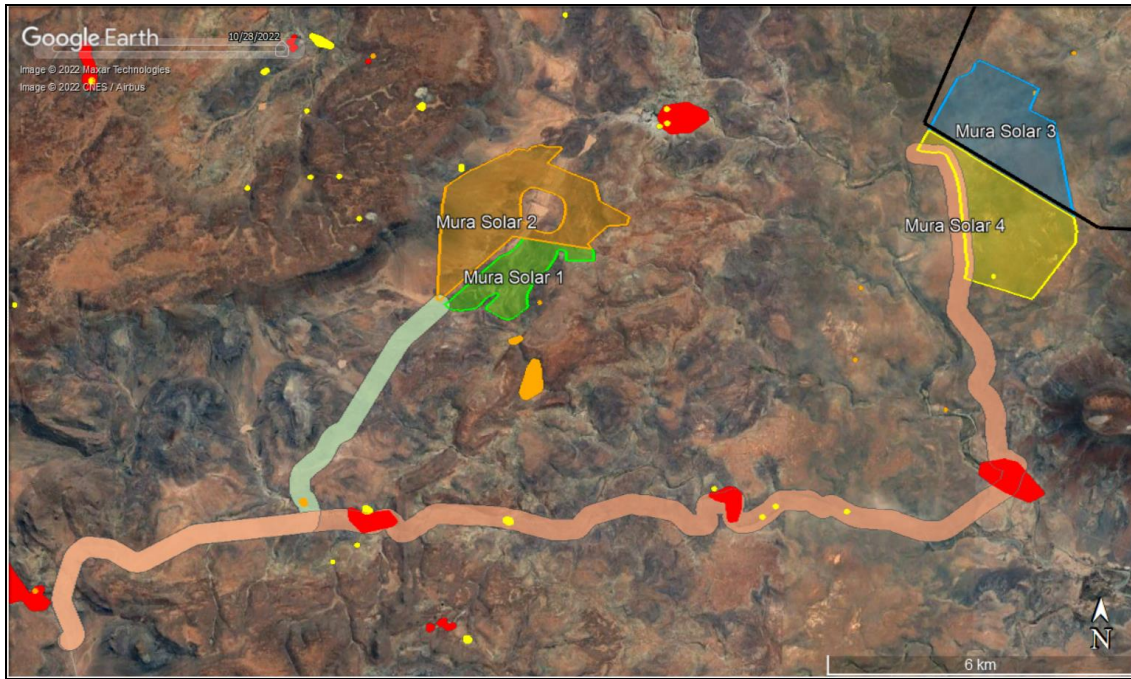


Figure 14: Grade map of the study area. Note that it is constructed using data from several projects but that only those sites directly relevant to this project appear in the report

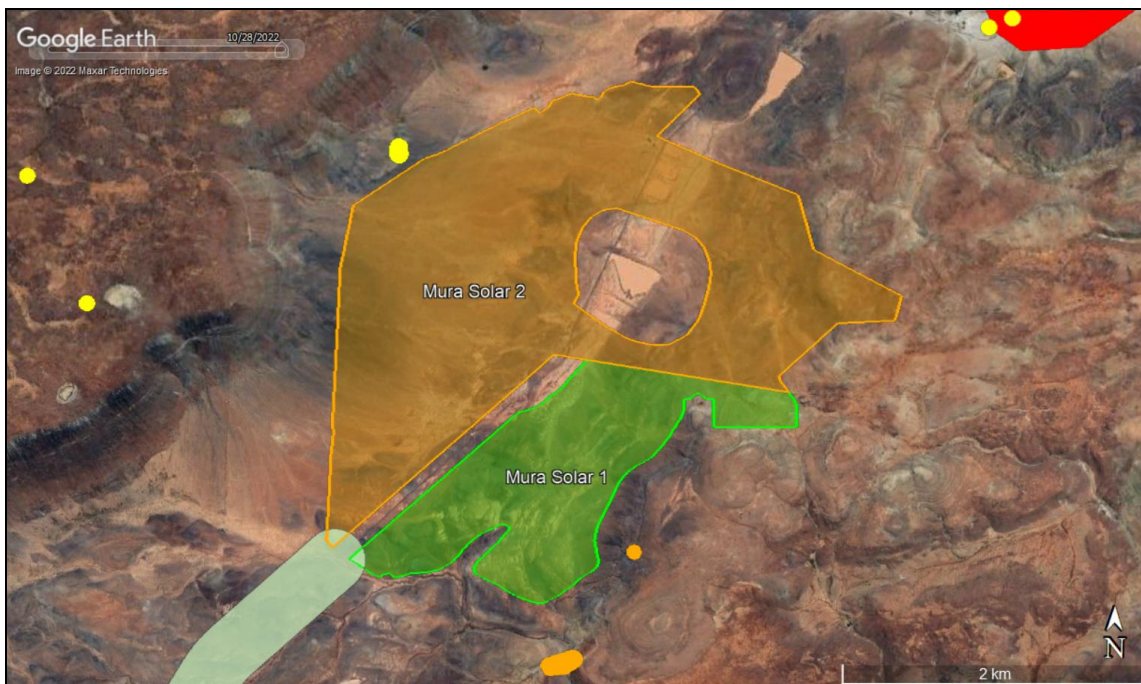


Figure 15: Smaller scale map showing heritage resource grading in the vicinity of the Mura 1 and Mura 2 footprints

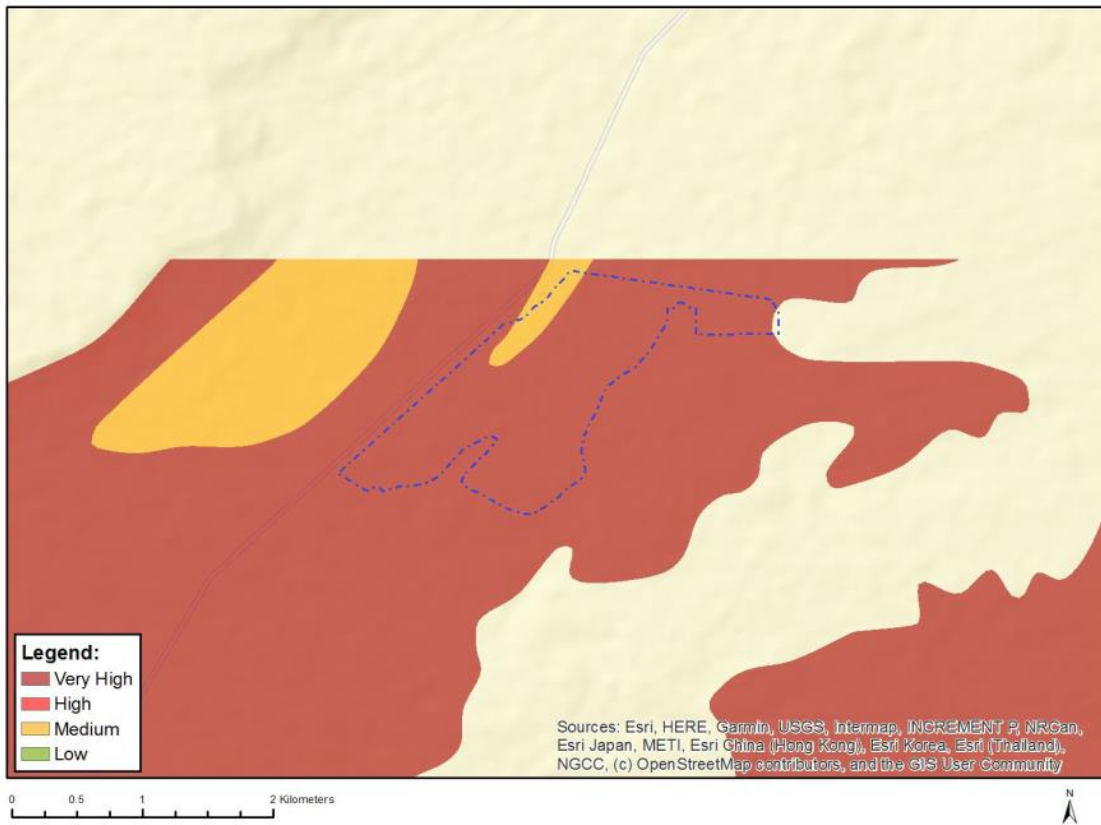


Figure 16: Map of Palaeontology Sensitivity

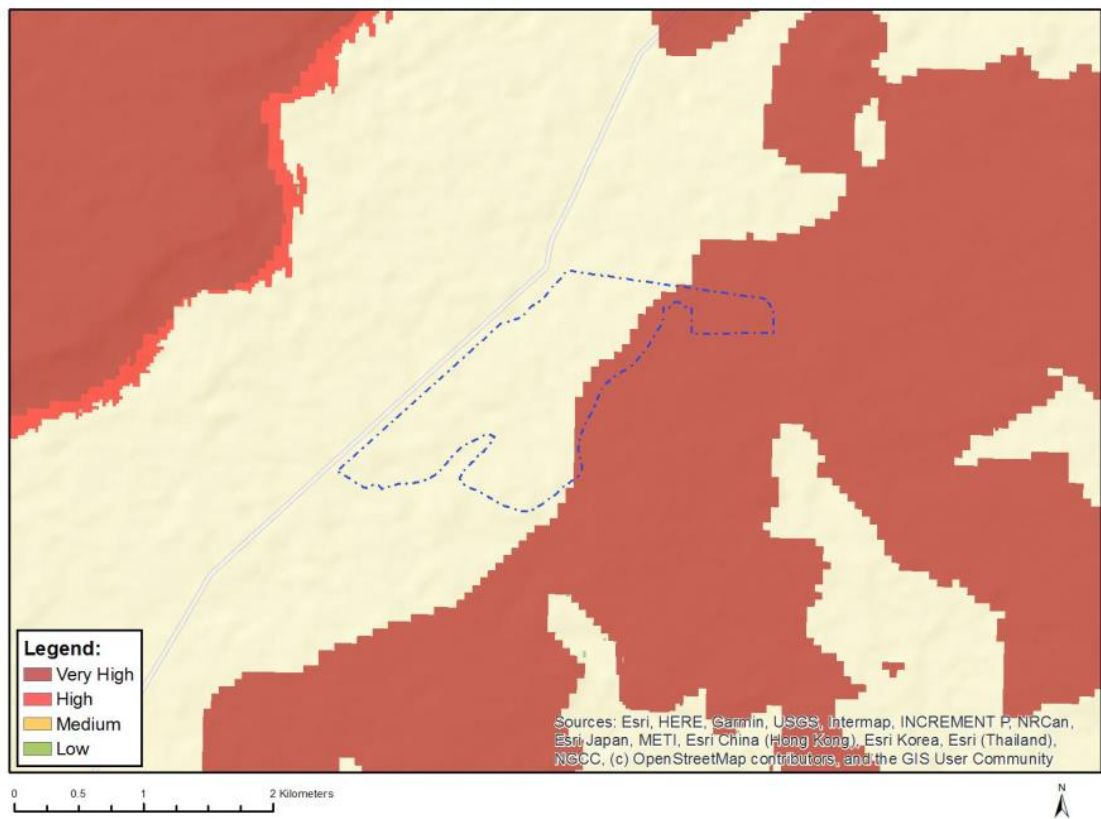


Figure 17: Map of Landscape Sensitivity



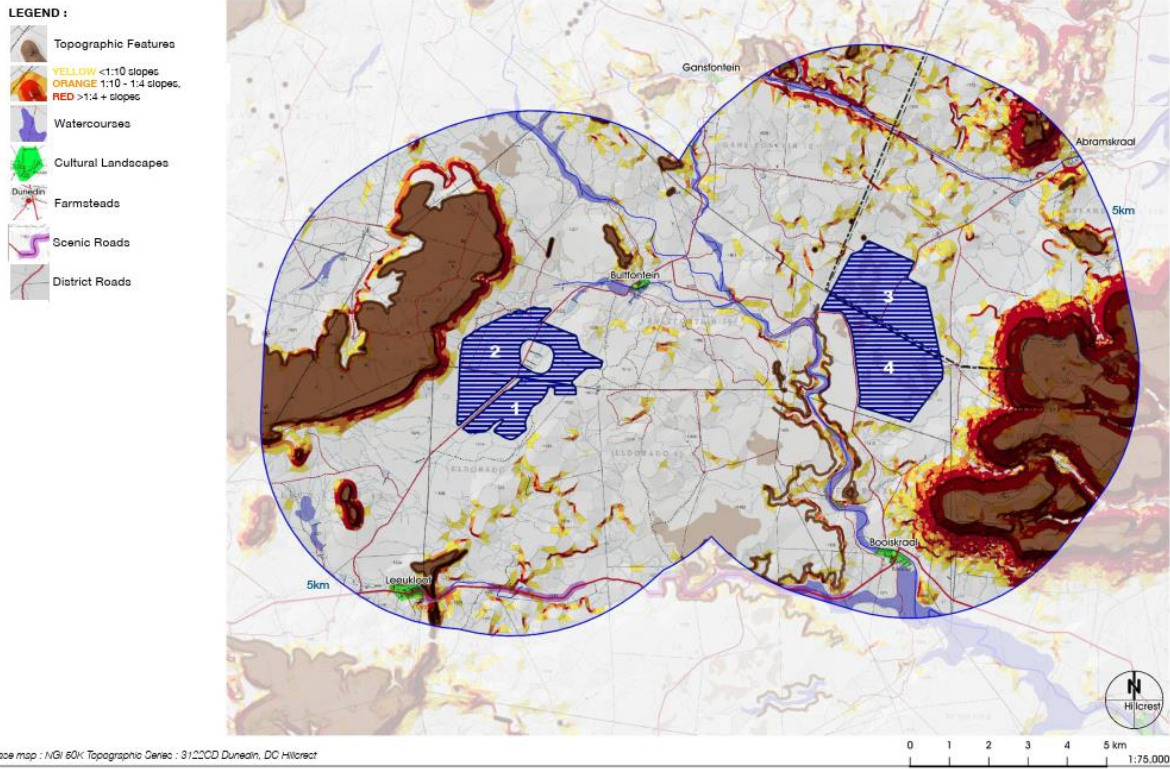


Figure 18: Visual features

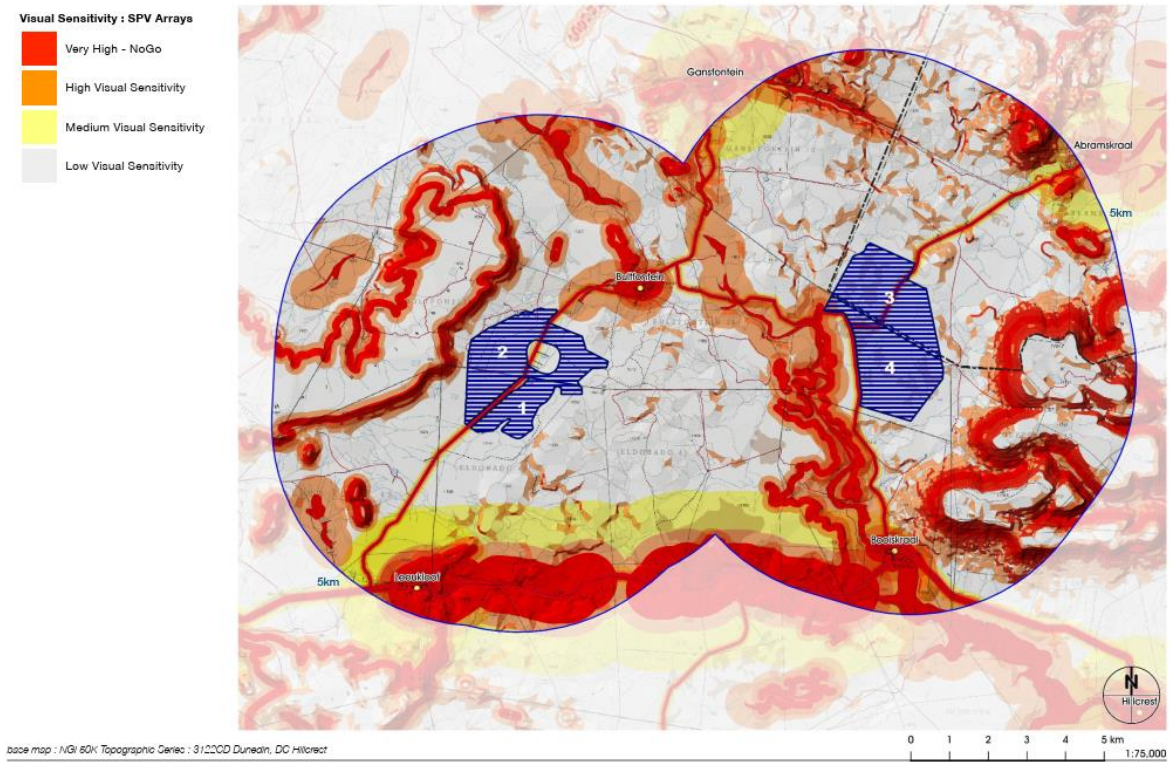


Figure 19: Visual Sensitivity



Figure 20: Map of RFI Sensitivity

### 7.3 Sub-section 3: Declaration

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

Signature Proponent/applicant/ holder of EA

Date:



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1/3/2023

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

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

## PART C

### 8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and impact management actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

**NOT REQUIRED**

No Environmental Sensitivities Identified within the Substation Site Footprint (Refer to Figure 3)



## APPENDIX 1: METHOD STATEMENTS

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