

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) FOR THE DEVELOPMENT OF THE RENEWABLE ENERGY GENERATION ROJECT AND ITS ASSOCIATED INFRASTRUCTURE MAT JHABENG LOCAL MUNICIPALITY, FREE STATE PROVINCE (VIRGINIA 3) - FINAL

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AUGUST 2023

**PROPOSED RENEWABLE ENERGY GENERATION PROJECT ON  
THE FARM BLOMSKRAAL 216, VENTERSBURG RD, MATJHABENG  
LOCAL MUNICIPALITY, LEJWELEPUTSWA DISTRICT  
MUNICIPALITY, FREE STATE PROVINCE (Virginia 3)**

**Short name: Virginia 3 Solar Park**

Version 1: January 2022

Version 2 (Amendment): August 2023

**PROJECT APPLICANT**

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<b>Report Title</b>	<b>Proposed Renewable Energy Generation Project on the Farm Blomskraal 216, Ventersburg Rd, Matjhabeng Local Municipality, Lejweleputswa District Municipality, Free State Province (Virginia 3)</b>	
<b>Author &amp; Reviewer (EMPr Amendment)</b>	<p>Author – Tarryn Frankland (Terramanzi Group, EAPASA Candidate – 2022/6205)</p> <p>Reviewer – Fabio Venturi (Terramanzi Group, EAPASA 2021/4088)</p> <p>Reviewer – Kirsten Shaw (Terramanzi Group, EAPASA Candidate – 2022/4741)</p> <p>Reviewer – Chane Olckers (Terramanzi Group)</p> <p>Reviewer – Zandria Jordan (Terramanzi Group)</p>	
	<b>Basic Assessment Report – February 2022</b>	<b>EMPr Amendment – Specialist Verification Letters (August 2023)</b>
<b>Specialist report/letter</b>	<ul style="list-style-type: none"> <li>• Terrestrial Biodiversity - Dr BJ Henning (AGES)</li> <li>• Avifaunal Report – Joeseoh Grosel (Tembele Ecological Services)</li> <li>• Agricultural Report – Dr BJ Henning (AGES)</li> <li>• Archaeological Report – Nelius Kruger (Exigo Sustainability)</li> <li>• Palaeontological Report – Prof Bruce Rubidge (University of Witwatersrand)</li> <li>• Visual Report – Mitha Cilliers – Mitha Cilliers Landscape Architect)</li> <li>• Traffic Report – Paul Van Der Westhuizen (Siyazi Limpopo Consulting)</li> <li>• RFI Report – Philip F Smuts (Atesco Technologies CC)</li> </ul>	<ul style="list-style-type: none"> <li>• Trevor O'Donoghue (NCC Environmental Services)</li> <li>• Luke Strugnell (Ecological Services)</li> <li>• Francois Knight (AgrilInformatics)</li> <li>• Wouter Fourie (PGS Heritage)</li> <li>• Wouter Fourie (PGS Heritage)</li> <li>• Steven Stead (VRM Africa)</li> <li>• Peter Arangie (ITS)</li> <li>• Not required</li> </ul>

	<ul style="list-style-type: none"> <li>• Aviation Report – Tobias P Du Toit (Tappas Aviation Consultant)</li> <li>• Socio-econ Report – Glen Steyn (Glen Steyn Associates)</li> <li>• Geotech Report – Carel De Beer (Geotechnical Consulting Services)</li> <li>• Wetland Report – DR BJ Henning (AGES)</li> <li>• Storm water Management Plan – (AGES)</li> <li>• Alien Invasive Management Plan (AIMP) – (AGES)</li> <li>• Plant Rescue &amp; Protection – (AGES)</li> <li>• Rehabilitation and Revegetation Plan – (AGES)</li> </ul>	<ul style="list-style-type: none"> <li>• Not required</li> <li>• Tony Barbour (Tony Barbour Environmental Consulting)</li> <li>• Not required</li> <li>• Stephen Van Staden (FEN Consulting)</li> <li>• Stephen Van Staden (FEN Consulting)</li> <li>• Trevor O'Donoghue (NCC)</li> <li>• Trevor O'Donoghue (NCC)</li> <li>• Trevor O'Donoghue (NCC)</li> </ul>
<b>Client</b>	URSA Energy (RF) (Pty) Ltd	
<b>Report Version</b>	Final EMPr – Amended	
<b>Submission Date</b>	August 2023	

**REPORT DISTRIBUTION LIST**

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	Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEPA)
	Lejweleputswa District Municipality
	Matjhabeng Local Municipality
	South African Heritage Resources Agency (SAHRA)
	Eskom Land & Rights
	Registered Interested and Affected Parties (I&AP's)

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14/12/16/3/3/2/2101	August 2023	3.0	Final – Amendment

**LIST OF ACRONYMS**

BBBEE:	Broad Based Black Economic Empowerment	PPE:	Personal Protective Equipment
BESS:	Battery Energy Storage System	PV:	Photovoltaic
CHSSP:	Community Health, Safety & Security Plan	SAHRA:	South African Heritage Resources Association
DFFE:	Department of Forestry, Fisheries & Environment	SACNASP:	South African Council for Natural and Scientific Professionals
DWS:	Department of Water & Sanitation	SCC:	Species of Conservation Concern
EA:	Environmental Authorisation	SEI:	Site Ecological Importance
EAPASA:	Environmental Assessment Practitioners Association of South Africa	SEP:	Stakeholder Engagement Plan
ESCO:	Environmental Site Compliance Officer		Stormwater Management Plan
ESMS:	Environmental and Social Management System		Waste Management License
ESCO:	Environmental Control Officer reporting to DFFE	SUDS:	Water Use License
EDLs:	Episodic Drainage Lines	SWMP:	Zone of Regulation
EIA:	Environmental Impact Assessment	WML:	Waste Management License
ELM:	Emthanjeni Local Municipality	WUL:	Water Use License
EMPR:	Environmental Management Programme	ZoR:	Zone of Regulation
EMPR:	Environmental Management Programme Report		
EO:	Environmental Officer		
GA:	General Authorisation		
Ha:	hectares		
I&APs:	Interested & Affected Parties		
IAIAsa:	International Impact Assessment Association of Southern		
IFC:	International Finance Corporation		
km/h:	Kilometres per hour		
kV:	Kilovolts		
m <sup>2</sup> :	Square metres		
MC:	Monitoring Committee		
mwh:	Megawatt hours		
mw:	megawatts		
NEMA:	National Environmental Management Act		
NEM:WA:	National Environmental Management: Waste Act		
O&M:	Operations & Maintenance		
OHPL:	Overhead Power Line		

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## Foreword

AGES (Pty) Ltd compiled the Environmental Management Programme (EMPr) for the Virginia 3 Solar Park in January of 2022. The EMPr was approved as per the Environmental Authorisation (EA) issued on 19 May 2022 (DFFE Ref.: 14/12/16/3/3/2/2099, as amended 28 June 2023 (DFFE Ref.: 14/12/16/3/3/2/2099/AM1)).

The Applicant appointed the Terramanzi Group (Pty) Ltd in July 2023 to update and amend the EMPr as per the EA and project scope. This EMPr details the updates and amendments made to the EMPr. The updates include: the removal of the Battery Energy Storage System (BESS) and 132kV step-up substation and switching station from the EMPr as this infrastructure no longer forms part of the project scope.

## 1 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

<b>Company:</b>	Terramanzi Group (Pty) Ltd		
<b>EAP name:</b>	Mr Fabio Venturi		
<b>Qualifications:</b>	BSc Honours Zoology		
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## 2 GENERAL PROJECT INFORMATION

URSA Energy (RF) (Pty) Ltd is proposing the development of a renewable solar energy facility in a key strategic location in terms of the connection to the Eskom grid and in terms of the favourable solar irradiation on:

- **The Farm BLOMSKRAAL 216, Ventersburg RD**

located within the **Matjhabeng Local Municipality, Lejweleputswa District Municipality, Free State Province.**

Surveyor-general 21-digit site codes:

F	0	3	5		0	0	0	0	0	0	0	0	0	2	1	6	0	0	0	0
1	2		3			4					5									

The renewable energy generation facility will be a **Photovoltaic (PV) Power Plant** with a **maximum generation capacity up to 100 MW** at the point of connection (**Export Capacity**).

The name of the facility will be **VIRGINIA 3 SOLAR PARK.**

The **footprint (fenced area)** of the proposed development is approximately **245 ha in extent**, as detailed in the table below:

**Table 1. List of properties forming part of the Project Site and Project footprint**

Site location and Property details	
Farm	Blomskraal 216, Ventersburg RD
Portion	Portion 0
LPI code	F03500000000021600000
Overall Extent	4246.0575 hectares
Land Owner	Forum trading 124 (Pty) Ltd
Diagram deed number	G001861
Title deed number	T6572/1981
Registration date	20020118
Current land use	Grazing, game farming and croplands

Access to the Virginia 3 Solar Park will be from the **R72 Virginia – Aldam road**, which crosses the project site from a northwest to southeast direction.

URSA Energy (RF) (Pty) Ltd undertook an Environmental Impact Assessment (EIA)

process and acquired environmental authorization from the *National Department of Forestry, Fisheries and Environment (DFFE)*, in consultation with the *Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA)*, in terms of the EIA Regulations, 2014 published on 4 December 2014, as amended under section 24(5) and 44 of the National Environmental Management Act (NEMA, Act No. 107 of 1998).

The Virginia 3 Solar Park will connect via 33kV cables to the Virginia 3 Solar Park 132kV *step-up substation* and then via the 132kV Powerline to the Theseus Eskom (MTS) Substation. Please note that the 132kV Powerline received authorization through a separate Environmental Process under a different Applicant (Norma Energy (Pty) Ltd).

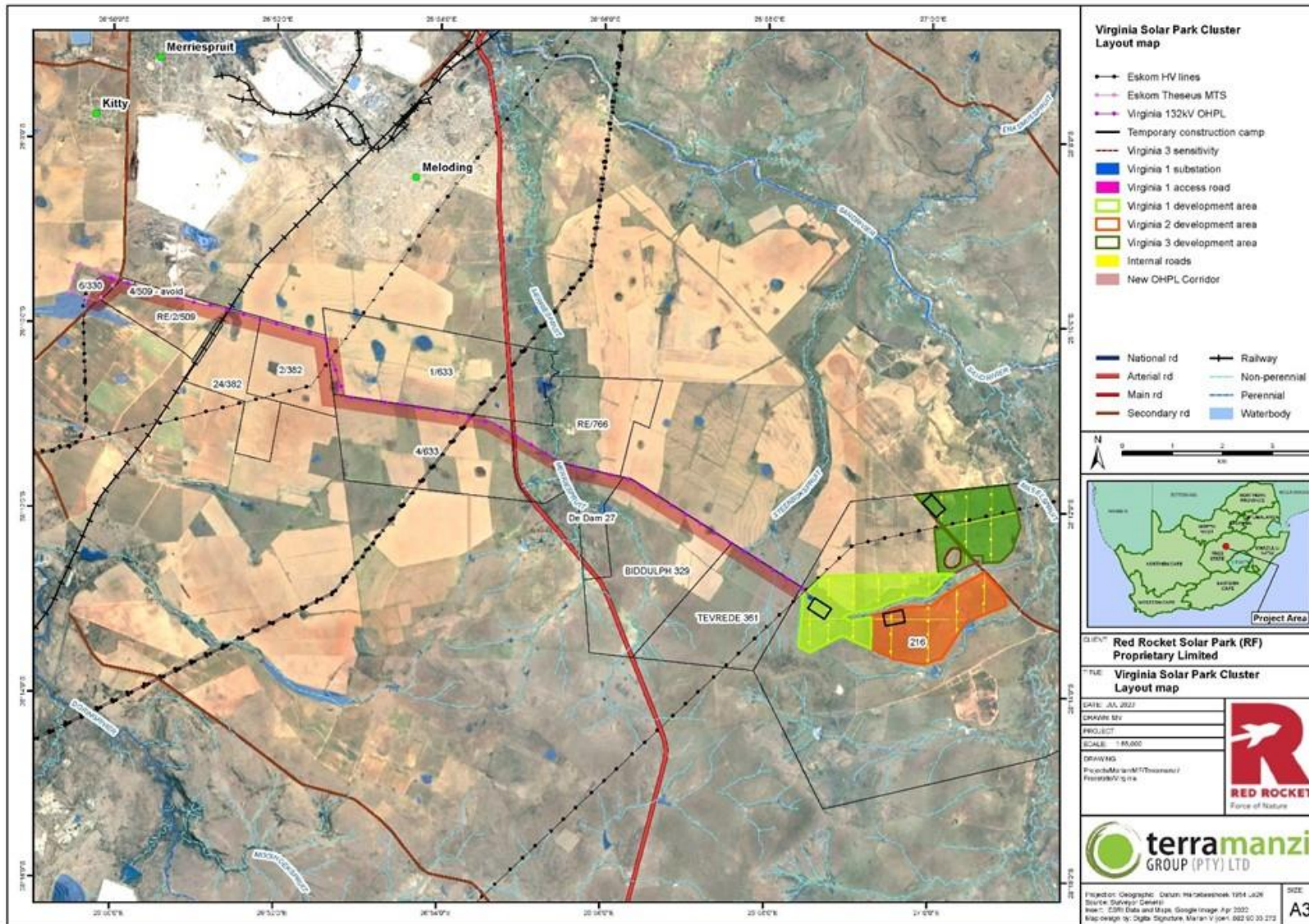


Figure 1 Regional Locality Map of the Virginia Solar Park Cluster



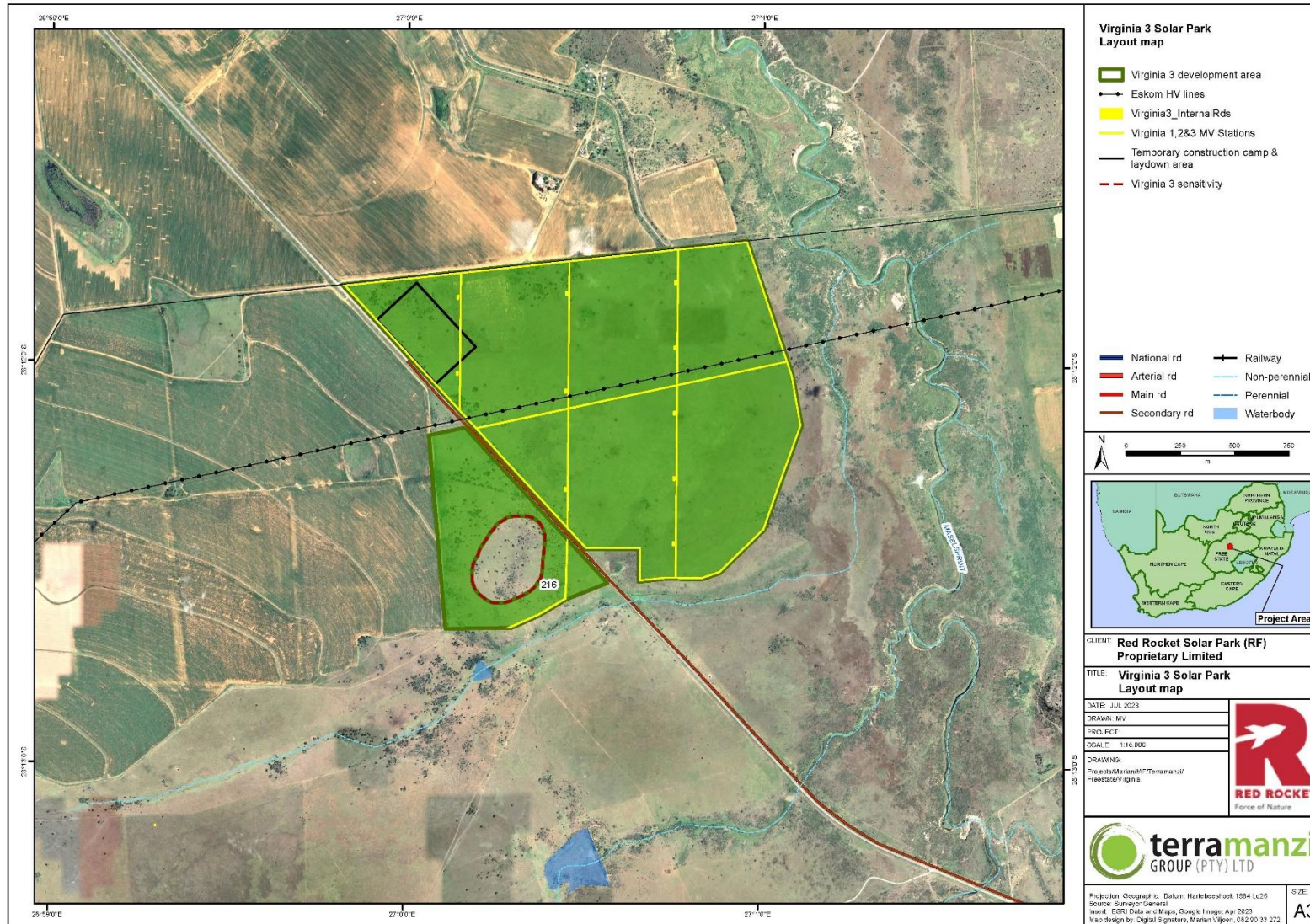


Figure 2: Layout map for the Virgini 3 Solar Park



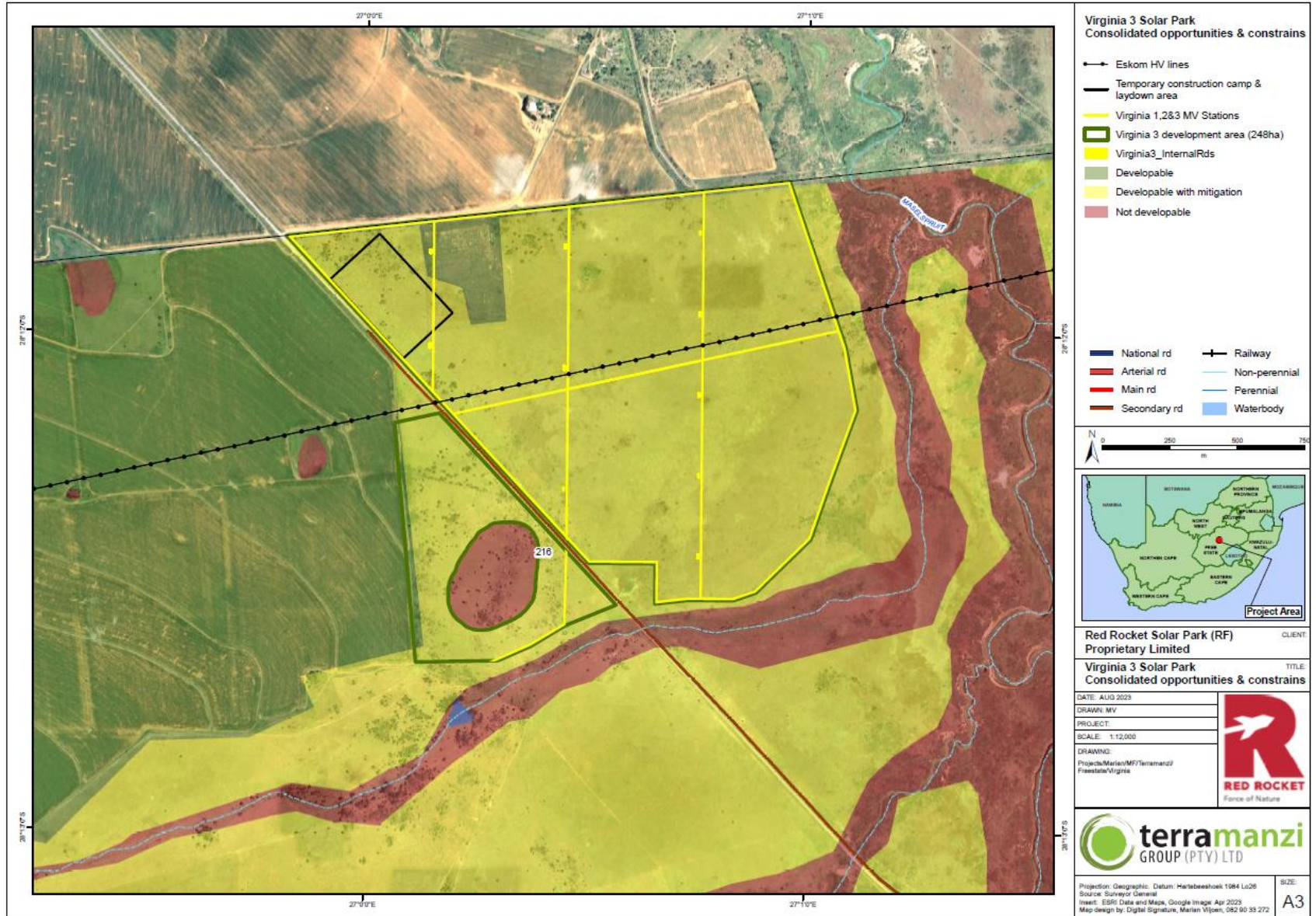


Figure 3: Site sensitivity Map for the Virgini 3 Solar Park

### 3 PURPOSE AND OBJECTIVES OF THE EMPr

This Environmental Management Programme (EMPr) is an environmental management tool used to prevent or mitigate avoidable adverse impacts of the construction, operation and decommissioning of the proposed Virginia 3 Solar Park. This EMPr can also be considered a tool useful for the enhancement of the positive benefits of the project and is compiled with the objective to supply the Department of Forestry, Fisheries and the Environment, (DFFE) with an updated EMPr to make a decision regarding the approval of the EMPr.

To comply with the Environmental Impact Assessment Regulations 2014, as amended in terms of Section 24(2) and 24D of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the EIA report must contain an Environmental Management Programme.

This Environmental Management Programme (EMPr) is compiled with reference to the requirements included in Appendix 4 of the EIA Regulations, 2014, as amended.

The following pre-amble provides context for this Application process:

The Virginia Solar Cluster (Virginia 1, 2 and 3) was BID as a consolidated project in Round 6 of the REIPPPP and now culminates as a project comprised of three separate EAs. The Virginia 3 Solar Park layout has been revised to drop certain infrastructure which no longer form part of the project scope. The Virginia Solar Cluster will not function as three separate facilities, but as one facility that connects into the National Eskom Grid. Please note that the 132kV Powerline received authorization through a sperate Environmental Process under a different Applicant (Norma Energy (Pty) Ltd) and does not form part of this environmental process.

The scope of this EMPr is for the construction and operation of the Virginia 3 Solar Park, located on the Farm Blomskraal 216, Ventersburg RD, Matjhabeng Local Municipality, Lejweleputswa District Municipality Free State Province. The EMPr covers the following project phases:

- Planning and design phase;
- Clearance phase;
- Construction phase;
- Operational phase;
- Decommissioning phase;

The purpose of this EMPr is to ensure that all potentially identified impacts identified during the Environmental Impact Assessment (EIA) process are managed effectively during the phases of the project. The EMPr indicates the mitigation measures to be implemented on site to ensure compliance with the said regulations. The decommissioning phase is similar



to the construction phase, but all possible care must be considered for the recycling of the materials and for the re-establishment of the site as it was the *status quo – ex ante* the development. The mitigation and management measures in the EIA process are systematically addressed in this EMPr which ensures the minimisation of adverse environmental impacts to an acceptable level.

In particular, the objectives of this EMPr are:

- to outline mitigation measures and environmental specifications required for the three phases of the project to manage and minimise the potential environmental impacts associated with the solar park.
- to ensure that the ~~three~~ phases have not adverse environmental impacts and that any potential environmental benefits are improved.
- to detect the responsible people/entities for the implementation of the measures, outlining functions and responsibilities.
- to state mechanisms and frequency for preventing long term or permanent environmental degradation.
- to facilitate responses to unforeseen events or changes in the project implementation not considered in the EIA process.

To achieve the goal of good and correct environmental management, the role of the on-site contractor is very important. The contractor must be aware of the responsibilities of the relevant environmental legislation and specific contents of the EMPr. Contractors must ensure that employees have a basic understanding of the environmental features of the site and the surrounding environment and are familiar with the requirements of the EMPr having also attended an environmental awareness training course. A copy of the EMPr must be available to all on-site staff and officials that may request to read the document.

The EMPr may however require amendment at certain stages through the lifespan of the project. The incidences which may require the amendment of this document include:

- Incorporation of conditions of approval contained in the Environmental Authorisation;
- Changes in environmental legislation;
- Results of post-construction monitoring and audit;
- Per instruction from the competent authority; and
- Changes in technology and best practice principles.

The relevant sections of this EMP have been updated to separately reflect the environmental outcomes and environmental actions. Should amendment of any of the EMPr objectives be required, an application for this must be submitted to the competent authority and approved before such changes are implemented. Changes to the EMPr actions may be affected without the need for an amendment process, subject to approval by the ECO and future amendment as part of the first environmental audit report.

EMPr Amendment – August 2023 – Current EMPr

The approved EMPr, dated January 2022, has been amended as per the requirements of the Applicant to align the EMPr with the current EA. The EMPr has been amended in terms of numbers 1 and 5 above. This EMPr (August 2023) version comprises the removal of the 132kV step-up substation and switching station and Battery Energy Storage System (BESS) from the Virginia 3 Solar Park; and the inclusion of specialist mitigation measures for the various phases which were missing from the original EMPr. The Virginia 3 Solar Park will connect via 33kV cables to the Virginia 3 Solar Park 132kV *step-up substation* and then via the 132kV Powerline to the Theseus Eskom (MTS) Substation.

This EMPr once authorised, becomes a legally binding document and contravention with this document constitutes a contravention with the Environmental Authorisation.

URSA Energy (RF) (Pty) Ltd must ensure that all construction and operations always comply with the conditions of the EMPR. The EMPR must be made binding on all contractors and must be included within their contractual agreements (where applicable).

Non-compliance with, or any deviation from, the requirements set out in this document will constitute a failure in compliance with the EMPR. It must be noted that in terms of Section 28 of the National Environmental Management Act No 107 of 1998 Virginia 3 Solar Park (Pty) Ltd has a 'duty of care' to prevent pollution to the environment. It further requires that-

*'Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.'*

The Virginia 3 Solar Park be deemed to be non-compliant with the requirements of the EMPR (including the EA, other licenses conditions and permit requirements) if:

- There is evidence of contravention of the requirements and conditions of the Environmental Authorisation and EMPR.
- There is an adverse environmental impact due to negligence URSA Energy (RF) (Pty) Ltd or its agents.
- URSA Energy (RF) (Pty) Ltd do not respond adequately to complaints from the public or the authorities.
- URSA Energy (RF) (Pty) Ltd fail to report and respond timeously to environmental incidents.

## 4 AUTHORITIES, LEGAL CONTEXT AND ADMINISTRATIVE REQUIREMENTS

The legislative and regulatory framework of reference for the solar power plant project includes statutory and non-statutory instruments by which National, Provincial and Local authorities exercise control throughout the development of the same project. The development and the environmental assessment process of a solar power plant project involve various authorities dealing with the different issues related to the project (economic, social, cultural, biophysical etc.).

### 4.1 REGULATORY AUTHORITIES

#### 4.1.1 National Authorities

At national level, the main regulatory authorities and agencies are:

- *Department of Energy (DoE)*: Department is competent and responsible for all policies related to energy, including renewable energy. Solar energy is contemplated and disciplined under the White Paper for Renewable Energy and the Department constantly conducts research activities in this respect.
- *Department of Forestry, Fisheries and Environment (DFFE)*: The Department is competent and responsible for all environmental policies and is the controlling authority under the terms of NEMA and EIA Regulations. The DFFE is also the competent authority for the proposed project and is entrusted with granting the relevant environmental authorisation.
- *National Energy Regulator of South Africa (NERSA)*: The Regulator is competent and responsible for regulating all aspects dealing with the electricity sector and issues the licence for independent power producers.
- *South African Heritage resources Agency (SAHRA)*: The Agency is responsible for the protection and the survey, in association with provincial authorities of listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes under the terms of the National Heritages Resources Act (Act no. 25 of 1999).
- *South African National Roads Agency Limited (SANRAL)*: the Agency is responsible for all National road routes.

#### 4.1.2 Provincial Authorities

At provincial level, the main regulatory authority is the *Free State Department of Economic, Small Business Development, Environment and Tourism (DESTEA)*; this Department is responsible for environmental policies and is the Provincial authority in terms of NEMA and the EIA Regulations and is also the commenting authority for the proposed project.

#### 4.1.3 Local Authorities

At a local level, the local and municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Free State Province, Municipalities and District Municipalities are involved in various aspects of planning and the environment related to solar energy facilities development. The Local Municipality is

the *Matjhabeng Local Municipality* which is part of the *Lejweleputswa Municipality*.

Under the terms of the Municipal System Act (Act no. 32 of 2000), all municipalities are deemed to go through an Integrated Development Planning (IDP) process in order to devise a five-year strategic development plan for the area of reference.

The identification of priority areas for conservation and their positioning within a planning framework of core, buffer, and transition areas is the subject of bioregional planning. Priority areas are individuated and defined with reference to visual and scenic resources and their identification and protection is granted through visual guidelines drafted for the area included in bioregional plans.

Local authorities also provide specific by-laws and policies in order to protect visual and aesthetic resources with reference to urban edge lines, scenic drives, special areas, signage, communication masts etc.

Finally, there are also various non-statutory bodies and environmental groups, who are involved in the definition of various aspects of planning and the protection of the environment, which may influence in the development of the proposed project.

The Virginia 3 Solar Park will comply with the international standards and regulations for photovoltaic power plants.

## 4.2 LEGISLATION, REGULATIONS AND GUIDELINES

A review of relevant legislation related to the proposed development is detailed in table 2.

**Table 2: Review of relevant legislation**

National Legislation	Sections applicable to the proposed project
Constitution of the Republic of South Africa (Act no. 108 of 1996)	<ul style="list-style-type: none"> <li>• Bill of Rights (S2)</li> <li>• Rights to freedom of movement and residence (S22)</li> <li>• Environmental Rights (S24)</li> <li>• Property Rights (S25)</li> <li>• Access to information (S32)</li> <li>• Right to just administrative action (S33)</li> </ul>
Fencing Act (Act no. 31 of 1963)	<ul style="list-style-type: none"> <li>• Notice in respect of erection of a boundary fence (S7)</li> <li>• Clearing bush for boundary fencing (S17)</li> <li>• Access to land for purpose of boundary fencing (S18)</li> </ul>
Conservation of Agricultural Resources Act (Act no. 43 of 1983)	<ul style="list-style-type: none"> <li>• Prohibition of the spreading of weeds (S5)</li> <li>• Classification of categories of weeds &amp; invader plants and restrictions in terms of where these species may occur (Regulation 15 of GN R0148)</li> <li>• Requirement and methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R0148)</li> </ul>
Environment Conservation Act (Act no. 73 of 1989)	<ul style="list-style-type: none"> <li>• National Noise Control Regulations (GN R154 dated 10 January 1992)</li> </ul>
National Water Act (Act no. 36 of 1998)	<ul style="list-style-type: none"> <li>• Entrustment of the National Government to the protection of water resources (S3)</li> <li>• Entitlement to use water (S4) - Schedule 1 provides the purposes which entitle a person to use water (reasonable domestic use, domestic gardening, animal watering, firefighting and recreational use)</li> <li>• Duty of Care to prevent and remedy effects of water pollution (S19)</li> <li>• Procedures to be followed in the event of an emergency incident which may impact on water resources (S20)</li> <li>• Definition of water use (S21)</li> <li>• Requirements for registration of water use (S26 and S34)</li> <li>• Definition of offences in terms of the Act (S151)</li> </ul>
National Forests Act (Act no. 84 of 1998)	<ul style="list-style-type: none"> <li>• Protected trees</li> </ul>
National Environmental Management Act (Act no. 107 of 1998)	<ul style="list-style-type: none"> <li>• Definition of National environmental principles (S2): strategic environmental management goals and objectives of the government applicable within the entire Republic of South Africa to the actions of all organs of state, which may significantly affect the environment</li> <li>• NEMA EIA Regulations, 2010 and 2014, as amended.</li> <li>• Requirement for potential impact on the environment of listed activities to be considered, investigated, assessed, and reported on to the competent authority (S24 - Environmental Authorisations)</li> <li>• Duty of Care (S28): requirement that all reasonable measures be taken to prevent pollution or degradation from occurring, continuing and recurring, or, where this is not</li> </ul>

	<p>possible, to minimise and rectify pollution or degradation of the environment</p> <ul style="list-style-type: none"> <li>• Procedures to be followed in the event of an emergency incident which may impact on the environment (S30)</li> </ul>
National Heritage Resources Act (Act no. 25 of 1999)	<ul style="list-style-type: none"> <li>• SAHRA, in consultation with the Minister and the MEC must establish a system of grading places and objects which form part of the national estate (S7)</li> <li>• Provision for the protection of all archaeological objects, paleontological sites, material and meteorites entrusted to the provincial heritage resources authority (S35)</li> <li>• Provision for the conservation and care of cemeteries and graves by SAHRA, (S36)</li> <li>• List of activities which require notification from the developer to the responsible heritage resources authority, with details regarding location, nature, extent of the proposed development (S38)</li> <li>• Requirement for compilation of a Conservation Management Plan and permit from SAHRA for the presentation of archaeological sites for tourism (S44) promotion</li> </ul>
National Environmental Management: Biodiversity Act (Act no. 10 of 2004)	<ul style="list-style-type: none"> <li>• Provision for the MEC for Environmental Affairs/Minister to publish a list of threatened ecosystems in need of protection (S52)</li> <li>• Provision for the MEC for Environmental Affairs/Minister to identify any process or activity which may threaten a listed ecosystem (S53) Provision for the MEC for Environmental Affairs/Minister to publish a list of critical endangered species, endangered species, vulnerable species and protected species (S56(1) - see Government Gazette 29657)</li> <li>• Three government notices were published: GN R150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R151 (Lists of critically endangered, vulnerable, and protected species) and GN R152 (Threatened Protected Species Regulations)</li> </ul>
National Environmental Management: Air Quality Act (Act no. 39 of 2004)	<ul style="list-style-type: none"> <li>• Provision for measures in respect of dust control (S32)</li> <li>• Provision for measures to control noise (S34)</li> </ul>
National Environmental Management: Waste Management Act (Act no. 59 of 2008)	<ul style="list-style-type: none"> <li>• Waste management measures</li> <li>• Regulations and schedules</li> <li>• Listed activities which require a waste licence</li> </ul>
Occupational Health and Safety Act (Act No. 85 of 1993)	<ul style="list-style-type: none"> <li>• Health and safety of all involved before and after construction must be protected.</li> </ul>

<b>Guideline Documents</b>	<b>Sections applicable to the proposed project</b>
South African National Standard (SANS) 10328, Methods for environmental noise impact assessments in terms of NEMA no. 107 of 1998	<ul style="list-style-type: none"> <li>• Impact of noise emanating from a proposed development may have on occupants of surrounding land by determining rating level</li> <li>• Noise limits are based on the acceptable rating levels of ambient noise contained in SANS 10103</li> </ul>
Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads	<ul style="list-style-type: none"> <li>• The Guidelines outline rules and conditions related to transport of abnormal loads and vehicles on public roads and detailed procedures to be followed for the grant of exemption Permits</li> </ul>

Policies and White Papers	Sections applicable to the proposed project
The White Paper on the Energy Policy of the Republic of South Africa (December 1998)	<ul style="list-style-type: none"> <li>The White Paper supports investment in renewable energy initiatives, such as the proposed solar power plant project</li> </ul>
The White Paper on Renewable Energy (November 2003)	<ul style="list-style-type: none"> <li>The White Paper outlines the Government's vision, policy, principles, strategic goals and objectives for the promotion and the implementation of renewable energy in South Africa</li> </ul>
Integrated Resource Plan (IRP1) Integrated Resources Plan 2010-2030 (IRP 2010) and updated IRP.	<ul style="list-style-type: none"> <li>The first Integrated Resource Plan (IRP1) was released late 2009. Subsequently the DoE decided to undertake a detailed process to determine South Africa's 20-year electricity plan, the Integrated Resources Plan 2010-2030 (IRP 2010).</li> <li>The IRP1. IRP 2010 and IRP 2019 outline the Government's vision, policy and strategy in matter of the use of energy resources and the current status of energy policies in South Africa.</li> <li>In the <b>IRP 2019</b>, published in October 2019, provision has been made to procure an additional <b>6 000 MW</b> of solar PV and 14 400 MW of wind between <b>2022</b> and <b>2030</b>.</li> </ul>
Renewable Energy IPP Procurement Programme (REIPPPP)	<ul style="list-style-type: none"> <li>The IPP Procurement Programme, issued on 3<sup>rd</sup> August 2011 by the DoE, envisages the commissioning of <b>3 725 MW</b> of renewable projects (<b>1 450 MW with Solar photovoltaic technology</b>) <b>capable of beginning commercial operation before the end of 2020</b>.</li> </ul>
Equator Principles (July 2006)	<ul style="list-style-type: none"> <li>The Equator Principles provide that future developments with total project capital costs of US\$10 million or more shall be financed only if socially and environmentally sustainable</li> </ul>

## IFC Performance Standards

The EMPr is an aspect of a broader project Environmental and Social Management System (ESMS), in terms of the International Finance Corporation (IFC) Performance Standards. The objectives and applicability of the eight IFC Performance Standards are detailed in Table 2.

**Table 2: Objectives and Applicability of the IFC Performance Standards to the Virginia 3 Solar Park Construction and Operation**

Reference	Requirements	Project Specific Applicability
<b>Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts</b>		
Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders.		
<b>Objectives:</b>		
<ul style="list-style-type: none"> <li>– To identify and evaluate environmental and social risks and impacts of the project.</li> <li>– To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, 5 and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.</li> <li>– To promote improved environmental and social performance of clients through the effective use of management systems.</li> <li>– To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.</li> <li>– To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.</li> </ul>		
1.1	Policy	A formal ESMS will be compiled for the project prior to its commencement.
1.2	Identification of Risks and Impacts	
1.3	Management Programmes	
1.4	Organisational Capacity and Competency	
1.5	Emergency Preparedness and Response	
1.6	Monitoring and Review	
1.7	Stakeholder Engagement	
1.8	External Communication and Grievance Mechanism	
1.9	Ongoing Reporting to Affected Communities	
<b>Performance Standard 2: Labour and Working Conditions;</b>		
Performance Standard 2 recognises that the pursuit of Economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers		
<b>Objectives:</b>		
<ul style="list-style-type: none"> <li>– To promote the fair treatment, non-discrimination, and equal opportunity of workers.</li> <li>– To establish, maintain, and improve the worker-management relationship.</li> </ul>		



<ul style="list-style-type: none"> <li>– To promote compliance with national employment and labour laws.</li> <li>– To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client’s supply chain.</li> <li>– To promote safe and healthy working conditions, and the health of workers.</li> <li>– To avoid the use of forced labour.</li> </ul>		
2.1	<ul style="list-style-type: none"> <li>– Working Conditions and Management of Worker Relationship</li> <li>– Human Resources Policy and Management</li> <li>– Working Conditions and terms of Engagement</li> <li>– Workers organisation</li> <li>– Non- Discrimination and Equal Opportunity</li> <li>– Retrenchment</li> <li>– Grievance Mechanism</li> </ul>	<p>A formal ESMS will be compiled for the project prior to its commencement. Human resource and labour policies will be included in the ESMS.</p>
2.2	<ul style="list-style-type: none"> <li>– Protecting the Workforce</li> <li>– Child Labour</li> <li>– Forced Labour</li> </ul>	
2.3	Occupational health and Safety	
2.4	Workers Engaged by Third Parties	
2.5	Supply Chain	
<p><b>Performance Standard 3: Resource Efficiency and Pollution Prevention</b></p> <p>Performance Standard 3 recognises that increased Economic activity and urbanisation often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world.</p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>– To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities.</li> <li>– To promote more sustainable use of resources, including energy and water.</li> <li>– To reduce project-related GHG emissions.</li> </ul>		
3.1	<ul style="list-style-type: none"> <li>– Resource Efficiency</li> <li>– Greenhouse Gases</li> <li>– Water Consumption</li> </ul>	<p>The project is not greenhouse gas (GHG) emissions intensive and the detailed assessment and reporting of emissions is not required. This project, however, seeks to facilitate resource efficiency and pollution prevention by contributing to the South African green Economy.</p> <p>Dust air pollution in the construction phase has been adequately addressed in the EMPr.</p>
3.2	<ul style="list-style-type: none"> <li>– Pollution Prevention</li> <li>– Air Emissions</li> <li>– Stormwater</li> <li>– Waste Management</li> <li>– Hazardous Materials Management</li> <li>– Pesticide use and Management</li> </ul>	

		<p>The project will not result in the release of industrial effluents. Potential pollution associated with sanitary wastewater is low and mitigation measures have been included in the EMPr.</p> <p>Land contamination of the site from historical land use (i.e. low intensity agricultural / grazing) is not considered to be a cause for concern.</p> <p>The waste generation profile of the project is not complex. Waste mitigation and management measures have been included in EMPr.</p> <p>Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel, cement etc.) and stored sanitary sewage in the operational phase are the only wastes expected to be associated with the project. The EMPr and emergency preparedness and response plan identifies these anticipated hazardous materials and recommends relevant mitigation and management measures.</p>
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**Performance Standard 4: Community Health, Safety, and Security**

Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.

**Objectives:**

- To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances.
- To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities

4.1	<ul style="list-style-type: none"> <li>– Community Health and Safety</li> <li>– Infrastructure and Equipment Design and Safety</li> <li>– Hazardous Materials Management and Safety</li> <li>– Ecosystem Services</li> <li>– Community Exposure to Disease</li> <li>– Emergency Preparedness and Response</li> </ul>	<p>The requirements included in PS 4 have been addressed in the EIA process and the management thereof has been included in the requirements of the EMPr.</p>
4.2	Security Personnel	

**Performance Standard 5: Land Acquisition and Involuntary Resettlement**

Performance Standard 5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary

resettlement refers both to physical displacement (relocation or loss of shelter) and to Economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.

**Objectives:**

- To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs.
- To avoid forced eviction.
- To anticipate and avoid, or where avoidance is not possible, minimise adverse social and Economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.
- To improve, or restore, the livelihoods and standards of living of displaced persons.
- To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

5.1	<ul style="list-style-type: none"> <li>– Displacement</li> <li>– Physical Displacement</li> <li>– Economic Displacement</li> <li>– Private Sector Responsibilities under Government Managed Resettlement</li> </ul>	<p>In terms of the land acquisition and involuntary settlement provisions in IFC PS 5, the development site is located on privately owned land that is utilised for the sole commercial agricultural use by the landowner. The project will restrict the future use of the land by the landowner through a lease agreement with the landowner.</p> <p>There is no involuntary physical or Economic displacement or resettlement involved with this project.</p>
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**Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources**

Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining Ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.

**Objectives:**

- To protect and conserve biodiversity.
- To maintain the benefits from Ecosystem services.
- To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.

6.1	Protection and Conservation of Biodiversity	<p>The preferred site layout plan has been developed to avoid negative impacts on sensitive environments. The EMPr includes good practice requirement to protect biodiversity and sensitive environments during the construction phase.</p>
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**Performance Standard 7: Indigenous People**

Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized

and vulnerable segments of the population. In many cases, their Economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded.

**Objectives:**

- To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples.
- To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts.
- To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner.
- To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project’s life-cycle.
- To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present.
- To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.

5.1	General – Avoidance of Adverse Impacts – Participation and Consent	The development of the Virginia 3 Solar Park will not impact on the rights of indigenous people.
5.2	Circumstances Requiring Free, Prior, and Informed Consent – Impacts on Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use – Critical Cultural Heritage – Relocation of Indigenous Peoples from Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use	
5.3	Mitigation and Development Benefits	
5.4	Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues	

**Performance Standard 8: Cultural Heritage**

Performance Standard 8 recognizes the importance of cultural heritage for current and future generations

**Objectives:**

- To protect cultural heritage from the adverse impacts of project activities and support its preservation.
- To promote the equitable sharing of benefits from the use of cultural heritage.

8.1	Protection of Cultural Heritage in Project Design and Execution	A cultural heritage study was performed as part of the S&EIR process. The impact of the proposed development on the cultural heritage resources of the
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		<p>area after the implementation of mitigation measures was assessed to be Low. The site layout has been designed to avoid potential heritage sites in the area. The EMPr includes a requirement for a Chance Find Procedure and protection of other potential heritage resources if unearthed during construction.</p>
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### 4.3 LISTED ACTIVITIES IN TERMS OF NEMA

The application was submitted in terms of the EIA Regulations, 2014, as amended and listed activities involved in the proposed development are listed in table 3.

Table 3: Listed Activities in terms of sections 24 and 24D of NEMA approved for the proposed development

<p><b>GN R.983 Item 12 (xii)(c)</b>  <b>The development of –</b>  <b>(xii) infrastructure or structures with a physical footprint of 100m<sup>2</sup> or more;</b>  <b>(c) within 32m of a watercourse, measured from the edge of a watercourse,</b></p>	<p>The proposed Virginia 3 Solar Park will be located within 32m from the edge of watercourses.</p>
<p><b>GN R.983 Item 19</b>  <b>The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of 10 cubic metres from a watercourse</b></p>	<p>The proposed Virginia 3 Solar Park will be located near the edge of watercourses and some of the watercourses (drainage lines) will have to be crossed to gain access to the site and this will lead to the removal of material from the watercourse.</p>
<p><b>GN R.983, Item 28 (i)</b>  <b>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:</b>  <b>(i)</b>  <b>(ii) will occur outside an urban where the total land to be developed is bigger than 1 ha.</b></p>	<p>The Virginia 3 Solar Park can be regarded as an industrial development, where the total area to be transformed (footprint) will be bigger than 5 ha (up to 245 ha).</p> <p>The project site is currently being used for livestock grazing and agriculture.</p>
<p><b>GN R.983, Item 24 (ii)</b>  <b>The development of -</b>  <b>(ii) a road with a reserve wider than 13,5m, or where no reserve exists where the road is wider than 8m</b></p>	<p>During construction phase, access road will have a reserve wider than 13.5 m to allow the transportation of abnormal goods (e.g. power transformers, etc.).</p>
<p><b>GN R.984 Item 1</b>  <b>The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 MW or more, excluding where such development of facilities or infrastructure is for PV installations and occurs in an urban area.</b></p>	<p>The project will consist of construction, operation and maintenance of a Photovoltaic (PV) Power Plant with a Maximum Export Capacity up to 100 MW with associated infrastructure and structures, located outside an urban area.</p>
<p><b>GN R.984 Item 15</b>  <b>The clearance of an area of 20 ha or more of indigenous vegetation</b></p>	<p>The PV Power Plant with associated infrastructure and structures will be constructed and operated on a footprint bigger than 20 ha (up to 245 ha). The required footprint will be cleared from the existing vegetation.</p>

<p><b>GN R.985, Item 12 (i) (ii) &amp; (iii)</b></p> <p><b>The clearance of an area of 300 m<sup>2</sup> or more of indigenous vegetation:</b></p> <p><b>(a) In Free State province:</b></p> <p><b>(i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</b></p> <p><b>(ii) Within critical biodiversity areas identified in bioregional plans</b></p> <p><b>(iii) Areas within a watercourse/wetland or within 100 m from the edge of a watercourse/wetland.</b></p>	<p>Virginia 3 Solar Park will affect an area of 300 square metres or more of indigenous vegetation, as endangered ecosystem (Vaal-Vet Sandy Grasslands) in terms of section 52 of the NEMBA and Critical Biodiversity areas identified in the Free State Biodiversity Conservation Plan (includes CBA1; CBA2 and ESA1 areas)</p>
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#### **4.4 All recommendations and mitigation measures recorded in the EIA report.**

In section 7 of this report, there is a summary table which constitutes the actual Environmental Management Program to be implemented, on site, during the construction, operation, and decommissioning phases. The first column of this table lists the recommendations and mitigation measures as recorded in the EIA report.

Despite all the management actions and mitigation measures to be implemented the applicant must adhere to the “duty of care” principle as included in section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) which states the following:

*Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.*

#### **4.5 All mitigation measures as listed in the specialist reports**

The mitigation measures included in the specialist’s reports (obtained during the EIA process and the EMPr Amendment Process) are included in the EMPr in table format in Section 7 of this report.



## 5 AUDITING OF THE EA AND EMPr

Compliance with the conditions of the EA and EMPr for the construction and post-construction monitoring phases must be monitored monthly. Compliance reports must be submitted to the competent authority monthly.

The results of the audit must be recorded in an environmental audit report and any noncompliance must be formally recorded, along with the response-action required or undertaken. Each non-compliance incident report must be issued to the relevant person(s), so that the appropriate corrective and preventative action is taken within an agreed upon timeframe.

Appendix 7 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Audit Report. The table below shows the legislated requirements of an audit reports, and all relevant environmental audits undertaken as part of the Virginia 3 Solar Park Facility (during construction and operation) should comply with these requirements.

Table 4. Contents of an audit report

<b>1) An Environmental audit report prepared in terms of these Regulations must contain:</b>
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.
(b) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.
(c) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.
(d) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.
(e) A description of the methodology adopted in preparing the environmental audit report.
(f) An indication of the ability of the EMPr, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan.
(g) A description of any assumptions made, and any uncertainties or gaps in knowledge.
(h) A description of a consultation process that was undertaken during the course of carrying out the environmental audit report.
(i) A summary and copies of any comments that were received during any consultation process.
(j) Any other information requested by the competent authority.

Throughout the lifespan of this project, several individuals and entities will fulfil various roles and responsibilities to ensure the effective implementation of this EMPr.

The key roles and responsibilities are detailed in [Table 5](#) below.

**Table 5. Roles and responsibilities regarding the implementation of this EMPr**

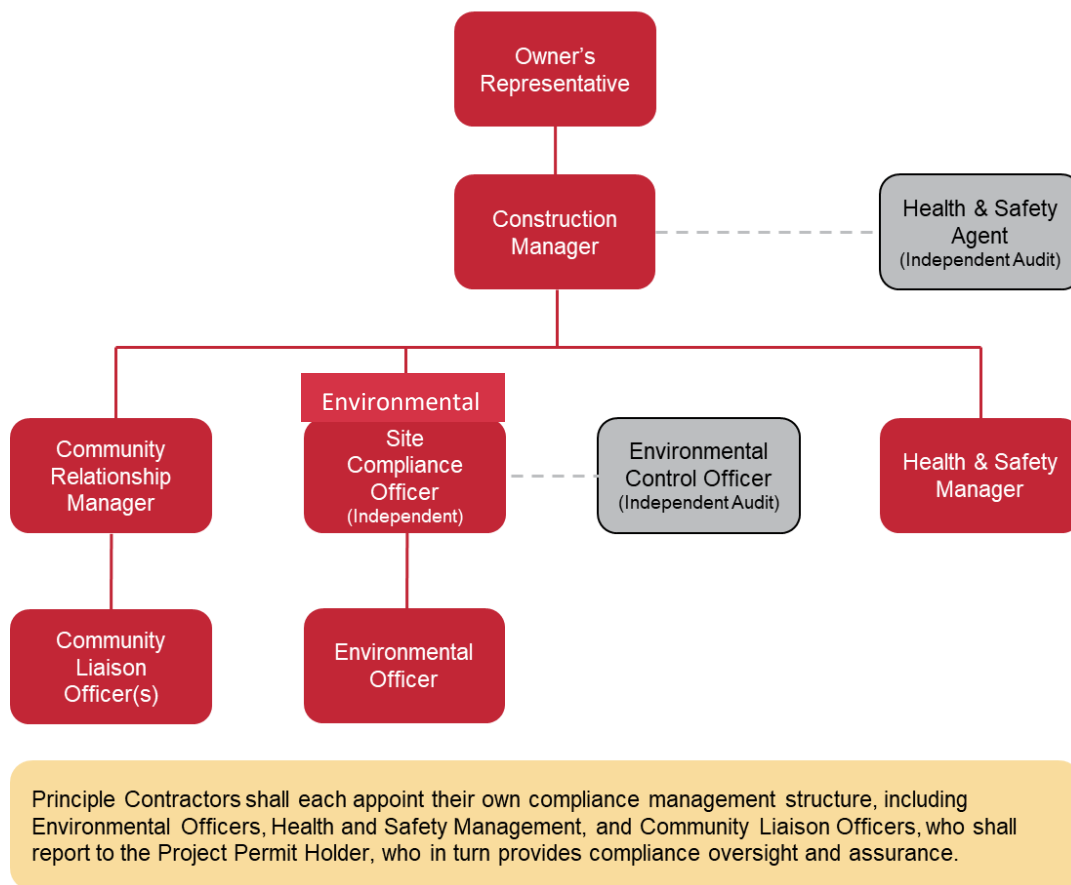
Responsible Parties	Role and responsibilities
Environmental Authority – Department of Forestry, Fisheries and the Environment ( <a href="#">DFFE</a> ).	<p>Role: The Department of Forestry, Fisheries and the Environment (DFFE) is the competent authority responsible for compliance with the relevant environmental legislation, namely the National Environmental Management Act and other Specific Environmental Management Acts (SEMA's).</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> <li>• Ensure overall compliance with the Environmental Authorisation (EA) &amp; EMPr.</li> <li>• Review this document and any revisions thereof.</li> <li>• Undertake site audits at their discretion.</li> <li>• Review ECO Reports.</li> <li>• Review Audit Reports</li> <li>• Review Incident Reports.</li> <li>• Enforce legal mechanisms for contraventions of this EMPr and EA.</li> </ul>
URSA Energy (RF) (Pty) Ltd (Reg No. 7107255918183)	<p>Role: The proponent is ultimately responsible and legally liable for ensuring compliance with all statutory requirements relating to the Solar facility.</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> <li>• Be fully conversant with the BAR, the conditions of EA and the EMPr;</li> <li>• Be fully conversant with all relevant environmental legislation and ensure compliance thereof;</li> <li>• Approve method statements (co-approval with Site Manager);</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> <li>• Ensure that activities onsite comply with all relevant environmental legislation</li> <li>• Ensuring compliance with the conditions set out in the Environmental Authorisation issued in terms of the NEMA, as well as those prescribed by other relevant legislation and guidelines.</li> <li>• Compliance with the requirements set out in this EMPr.</li> <li>• Ensuring, where required, all other permits, permissions and licences from all other statutory departments are in place. E.g.: Permit from provincial Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) to translocate or remove. <i>Boophane disticha</i> and <i>Helichrysum nudifolium</i> plants.</li> </ul>

<p>Environmental Control Officer (ECO) – To be appointed</p>	<p>Role: The ECO fulfils an advisory role to monitor, guide and report compliance with the EMPr.</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> <li>• A suitably qualified external ECO must be appointed by the Holder of the EA to audit the project compliance in terms of the EMPr and conditions of the EA on a monthly basis, during the construction phase, in line with Condition 21 of the EA.</li> <li>• The costs of the ECO shall be borne by the Holder of the EA (proof of appointment must be maintained onsite).</li> <li>• Revise, update and amend the EMPr if necessary and submit the amendments to the competent authority for consideration.</li> <li>• Ensure all relevant persons have a copy of the EMPr and any amendments thereof.</li> <li>• Advise the employer’s representative on any additional environmental authorisations and permits that may be required.</li> <li>• Facilitate the Environmental Education / Induction Training with the contract staff.</li> <li>• Review and comment on Method Statements relevant to environmental management and make recommendations to the employer’s representative.</li> <li>• Report any non-compliance with the EMPr or EA to the employer’s representative and competent authority if necessary.</li> <li>• Undertake regular site inspections in compliance with this EMPr.</li> <li>• Monitor, audit and verify that all works comply with the EA and the EMPr.</li> <li>• Keep record of EMPr implementation, monitoring and audits, including a full photographic record of works.</li> <li>• Comply and submit regular Environmental Control Reports to the competent authority, as well as employer’s representative &amp;/ holder of the authorisation.</li> <li>• Report any environmental incidents or environmental impacts immediately to the employer’s representative and the competent authority if necessary.</li> <li><del>• Report any environmental incidents or environmental impacts immediately to the employer’s representative and the competent authority if necessary.</del></li> <li>• Assist the contractor and employer’s representative planning for and implementing environmentally sensitive problem solving.</li> <li>• Advise the employer’s representative on suggested “stop work” orders.</li> </ul>
<p>Environmental Site Compliance Officer (ESCO) - To be appointed</p>	<p>Role: To assist the ECO with the day-to-day implementation and monitoring of the environmental management actions that are taking place on site.</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> <li>• A suitably qualified ESCO must be appointed by the Holder of the EA to monitor the project compliance onsite on a full time basis.</li> <li>• Responsibilities of the ESCO include: <ul style="list-style-type: none"> <li>○ Be fully conversant with the BAR, the conditions of EA and the EMPr;</li> <li>○ Be fully conversant with all relevant environmental legislation and ensure compliance thereof;</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Approve method statements (co-approval with Site Manager);</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> <li>● In addition, the ESCO will:             <ul style="list-style-type: none"> <li>○ Undertake monthly inspections of the site and surrounding areas 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> </li> <li>● Ensure that activities onsite comply with all relevant environmental legislation.</li> <li>● Day to day environmental control of contractors on site during the construction phase.</li> <li>● Monitoring of construction management activities during the construction phase.</li> <li>● Report to the ECO.</li> </ul>
<p>Environmental Officer (EO)</p>	<ul style="list-style-type: none"> <li>● The EO must be appointed by the Contractor/ Project Manager and is responsible for managing the day-to-day onsite implementation of the EMPr, and for the compilation of weekly environmental monitoring reports. In addition, the EO must act as liaison and advisor on all environmental and related issues, seek advice from the ESCO and ESCO 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 Virginia 3 Solar Park.</li> <li>● The following qualifications, qualities and experience are recommended for the individual appointed as the EO:             <ul style="list-style-type: none"> <li>○ A relevant environmental diploma or degree in natural sciences, as well as 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> </li> <li>● The EO’s responsibilities include:             <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 ESCO;</li> <li>○ Conducting site inspections during the defect’s liability period, and bringing any environmental concerns to the</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>attention of the ESCO 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;</li> <li>○ Ensuring that the Contractor is made aware of all applicable changes to the EMPr;</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> </ul> </li> <li>● 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 Holder of the EA.</li> </ul>
<p><u>Project Manager</u></p>	<p><b>Role:</b> The Employer’s representative role is likely to be fulfilled by the project engineer and assumes overall delegated responsibility for compliance with this EMPr, the EA, the conditions of the Planning Approval, Conditions of the WULA and all applicable legislation for the duration of the construction phase.</p> <p><b>Responsibilities:</b></p> <ul style="list-style-type: none"> <li>● Issue site instructions to the contractor based on the advice of the ECO.</li> <li>● Ensure that all detailed design incorporates the requirements of the EMPr and EA.</li> <li>● Ensure that the EMPr is included in all tender documents issued to prospective contractors and sub-contractors.</li> <li>● Ensure the EMPr is included in final contract documents.</li> <li>● Ensure that the Tenderers/Contractors adequately provide for compliance with the EMPr in their submissions.</li> <li>● Ensure that the EMPr is fully implemented by the relevant persons.</li> <li>● Ensure the contractor provides the necessary method statements.</li> <li>● Be accountable/ responsible, to the competent authority for any contravention or non-compliance by the Contractor.</li> <li>● Assist the contractor with input from the ECO in finding environmentally responsible solutions to problems.</li> <li>● Undertake regular site audits, site visits and inspections to ensure that the requirements of the EMPr are implemented</li> <li>● Give instructions on any procedures and corrective actions on</li> </ul>

	<p>advice from the ECO.</p> <ul style="list-style-type: none"> <li>• Report environmental incidents or non-compliance with the EA or EMPr to the environmental authority.</li> <li>• Issue spot fines, penalties or 'stop-work' orders for contravention of the EMPr and give instructions regarding corrective action.</li> </ul>
Site Manager	<ul style="list-style-type: none"> <li>• Be fully conversant with the BAR, the conditions of EA and the EMPr;</li> <li>• Approve method statements (co-approval with ESCO);</li> <li>• Provide support to the ESCO;</li> <li>• Be fully conversant with all relevant environmental legislation and ensure compliance thereof;</li> <li>• Be responsible for the implementation of the EMPr and conditions of the EA;</li> <li>• Ensure that audits are conducted to ensure compliance to the EMPr and conditions of the EA;</li> <li>• Liaise with the Project Manager or his delegate, the ECO/ESCO 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; and Confine construction activities to demarcated areas.</li> </ul>
Contractors, Staff and Service Providers	<ul style="list-style-type: none"> <li>• Complying with the Proponent's environmental management specifications;</li> <li>• Be conversant with all EMPr and conditions of the EA, and ensure compliance thereto; and</li> <li>• Adhering to any environmental instructions issued by the Site Manager/Project Manager on the advice of the ECO/ESCO.</li> </ul>



**Figure 4: Project permit holder’s management structure during construction.**

# **ENVIRONMENTAL MANAGEMENT PROGRAMME**



## 6 ENVIRONMENTAL MANAGEMENT PROGRAMME - PV POWER PLANT

PLANNING & DESIGN PHASE						
PLANNING & DESIGN PHASE						
Impact Management Outcome: Minimise impact to the environment by adhering to planning and design principles and relevant legislation						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Environmental Management Program (EMPr) must be compiled for clearance of indigenous vegetation and approved by DFFE.</li> </ul>	Environmental Consultant	Compile EMPr	During EIA phase	ECO/ <u>ESCO</u>	When EA is issued	Approval of EMPr
<ul style="list-style-type: none"> <li>A full Environmental Impact Assessment must be conducted, and Environmental Authorisation obtained from DFFE.</li> </ul>	Environmental Consultant	Conduct EIA process, obtain EA	During EIA phase	ECO / <u>ESCO</u>	When EA is issued	Environmental Authorisation
<ul style="list-style-type: none"> <li>A license must be obtained from Forestry and Free State Nature Conservation for the removal of protected trees/plants.</li> </ul>	Environmental Consultant	Apply for permit	During EIA phase	ECO / <u>ESCO</u>	Before clearance	License

CLEARANCE PHASE						
AIR QUALITY - CLEARANCE PHASE						
Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Compliance with the EA</b>						
<ul style="list-style-type: none"> <li>No activities will be allowed to encroach into a water resource without water use authorization being in place from the Department of Water and Sanitation (as per condition 33 of the EA (DFFE Ref.: 14/12/16/3/3/2/2101, dated 23 May 2022).</li> </ul>	Project Manager, ECO, ESCO, Freshwater specialist	Water use license application	Pre-construction	Freshwater specialist, Project manager	Pre-construction	Water use license application
<ul style="list-style-type: none"> <li>A pre-construction walk-through of the final development footprint must be undertaken in order to locate and identify Species of Conservation Concern that can be translocated (as per condition 35 of the EA).</li> </ul>	Project Manager, ECO, ESCO, Ecologist	Site walk down, Plant search and rescue plan	Pre-construction	Ecologist / ECO / ESCO	Pre-construction	Site walk down, Plant search and rescue report
<b>Earthworks and vegetation clearance</b>						

CLEARANCE PHASE						
<ul style="list-style-type: none"> <li>Construction areas must be dampened / irrigated with non-potable water to prevent excessive dust formation when applicable during clearance and site preparation.</li> </ul>	Contractor	Water spray. Dust Management Plan	During dry windy conditions	Site manager ECO / ESCO	Daily	Visual & check records
<ul style="list-style-type: none"> <li>Clearing of the construction sites should be done in, as far as reasonably practicable, phases of as during the construction progresses.</li> <li>Cleared topsoil should be stockpiled in such a way that transportation by wind or rain is limited/prevented. Restrict height of stockpiles, cover it and/or sandbag it.</li> </ul>	Contractor	Clearance schedule	During construction	Site manager ECO / ESCO	Weekly	Visual & check records
AIR QUALITY - CLEARANCE PHASE						
Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Movement of vehicles and construction equipment-fumes/smoke						
<ul style="list-style-type: none"> <li>Vehicles and construction equipment must maintained properly and be well serviced so that it does not produce excessive smoke.</li> </ul>	Contractor	Regular services	According to Maintenance schedule	Site Manager ECO / ESCO	Weekly	Service records
Movement of vehicles and construction equipment-Dust						
<ul style="list-style-type: none"> <li>Main roads should be gravelled or sprayed with water especially during the dry months for dust suppression.</li> <li>Internal roads must be maintained on a regular basis during construction.</li> </ul>	Contractor	Spray with water truck	When need in construction	Project manager ECO / ESCO	Daily	Visual check
<ul style="list-style-type: none"> <li>A speed limit should be enforced on dirt roads (30km/h).</li> <li>All vehicles must adhere to all road signage within the site</li> <li>Vehicles are only allowed in designated areas, unless advised by the ESCO .</li> </ul>	Contractor	Road signs	During construction	Project manager Contractor. ECO / ESCO	Weekly	Visual check
Burning of cleared vegetation and solid waste or fires for cooking and heating – smoke						

## CLEARANCE PHASE

<ul style="list-style-type: none"> <li>Cleared vegetation waste may not be burned on site but removed to a licensed landfill, or authorised waste disposal site in the Matjhabeng Local Municipality on a regular basis.</li> <li>No open fires and fires for cooking are allowed at construction sites. Plant material can be used as mulch or for compost.</li> <li>Solid waste may not be burnt on site. Solid waste must be kept in scavenger and weatherproof bins from where it must be removed to Matjhabeng Local Municipality landfill site weekly.</li> </ul>	Contractor	Instruction to workers Visual checks Supply waste containers & remove waste weekly	During construction	Project manager ECO / ESCO	Daily for fires Monthly for disposal	Visual check & disposal records
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### AIR QUALITY - CLEARANCE PHASE

Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Fire belts must be made and maintained around the development.</li> <li>Fire extinguishers should be placed strategically for easy access.</li> <li>Smoking only allowed at designated areas per on-site signage. Workers must dispose of cigarette butts in designated containers.</li> </ul>	Environmental Officer ; HSE Officer	Fire management plan	When required	EO, HSE Officer, ECO/ESCO	When required	Fire management plan report
<ul style="list-style-type: none"> <li>A waste management and recycling plan should be compiled for the construction phase of the development. The aim of the plan must ensure that the construction materials/debris generated on site be reduced, reused and recycled. The plan should be compiled in consultation with contractors and engineers.</li> </ul>	Contractor	Integrated waste management Implement plan	Daily during Construction	Project manager ECO /ESCO	Weekly	Visual Records of disposal.

### NOISE - CLEARANCE PHASE

Impact Management outcome: Minimise impact to animals and people through the control/mitigation of noise impacts

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Movement and operation of vehicles and machinery

## CLEARANCE PHASE

<ul style="list-style-type: none"> <li>Contractors must comply with all noise regulations.</li> <li>It should be ensured that the construction personnel comply with speed restriction of 30 km per hour within the site boundaries to reduce the generation of noise.</li> <li>Construction vehicles must be serviced regularly to ensure that they do not make excessive noise. The construction machinery must be fitted with noise mufflers and be maintained properly.</li> </ul>	Contractor / On-site safety officer	Vehicle maintenance	Continuous construction according to schedule	in Project manager Contractor / on-site safety office	Weekly	Records of compliance and incident register in Safety file
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### NOISE - CLEARANCE PHASE

Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Construction activities that is required to be conducted after hours should be done with minimal noise and disturbance.</li> </ul>	Contractor / On-site safety officer	Management of Noise on site during after hours work through site inspections	When required	Project manager Contractor / on-site safety office	When required	Compliance register, site inspection report
<ul style="list-style-type: none"> <li>All employees working in a noisy environment must be given the necessary ear protection gear.</li> </ul>	Contractor, HSE Officer	Physical handout of ear plugs	Daily	Project manager Contractor, HSE Officer	Weekly	Check use of ear protection by workers

## CONSTRUCTION PHASE

### GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Compliance with the EA</b>						
<ul style="list-style-type: none"> <li>The footprint of the development must be limited to the areas required for actual construction works and operational activities (Condition 34 of the EA).</li> </ul>	Site Manager, Contractor, ECO, ESCO	Final layout must be delineated the development boundary and site inspections must be conducted to ensure encroachment outside of the development area does not occur	Construction	Site Manager, Contractor, ECO, ESCO	Weekly site inspections	ECO audit, Site inspection observation
<ul style="list-style-type: none"> <li>Construction must include design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off (Condition 36 of the EA).</li> </ul>	Site Manager, Contractor, ECO, ESCO, Freshwater Specialist	Stormwater Management Plan	Construction	Contractor, ECO, ESCO, Freshwater Specialist	Construction	Stormwater Management Plan
<ul style="list-style-type: none"> <li>If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Sityhilelo Ngcatsha/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the National Heritage Resources Act 25 of 1999 (NHRA). (Condition 37 of the EA – 14/12/16/3/3/2/2101, dated 25 May 2022)</li> <li><b>A site walk down was conducted by the Heritage Specialist on 20 July 2023 to meet the requirements of Condition 37 of the EA. Heritage features were delineated with the appropriate buffers, these buffers have been</b></li> </ul>	Project Manager, ECO, ESCO, Contractor, Heritage Specialist	Conduct a site walk down to delineate heritage feature – Please note that <b>A site walk down was conducted by the Heritage Specialist on 20 July 2023 to meet the requirements of Condition 37 of the EA. Heritage features were delineated with the appropriate buffers, these buffers have been</b>	Construction	ECO / ESCO, Heritage specialist	Construction	Site inspection and reporting of uncovered heritage feature.

		<b>incorporated into the final layout.</b>  Chance find protocol must be implemented on site				
<ul style="list-style-type: none"> <li>If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA (Condition 38 of the EA – 14/12/16/3/3/2/2101, dated 25 May 2022)</li> </ul>	Project Manager, ECO, ESCO, Contractor, Heritage Specialist	Chance find protocol must be implemented on site	Construction	ECO / ESCO, Heritage specialist	Construction	Site inspection and reporting of uncovered heritage feature.
<ul style="list-style-type: none"> <li>The following conditions apply with regards to the appointment of specialist: If heritage resources are uncovered during the course of the development. a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources proven to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. (Condition 39 of the EA – 14/12/16/3/3/2/2101, dated 25 May 2022)</li> </ul>	Project Manager, ECO, ESCO, Contractor, Heritage Specialist	Chance find protocol must be implemented on site	Construction	ECO / ESCO, Heritage specialist	Construction	Site inspection and reporting of uncovered heritage feature.
<ul style="list-style-type: none"> <li>An integrated waste management approach must be Implemented that Is based on waste minimization and must Incorporate reduction. recycling, re-use and disposal where appropriate. Any solid waste must be disposed of at a landfill licensed in terms of Section 20 (b) of the National Environment Management Waste Act, 2008 (Act No.59 of 2008) (Condition 38 of the EA).</li> </ul>	Contractor, ECO, ESCO	Waste Management plan is to be drafted by the Contractor	Pre-Construction	Contractor, ECO, ESCO	Pre-Construction	Waste management plan checklist and waste slip collection

**Sanitation seepage and spillage from temporary chemical toilets.**

<ul style="list-style-type: none"> <li>Chemical sanitation facilities should be used on site and regularly (weekly) serviced by registered companies to ensure that no spills or leaks from toilets to groundwater or surface water take place.</li> </ul>	Contractor, EO	Appoint service contractor for weekly service of toilets Inspect toilets weekly	Weekly	Project manager / Site Manager/ ECO /ESCO	Weekly	Records
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**CONSTRUCTION PHASE**

**GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>The temporary sanitation system should be regularly inspected to ensure that no spills or leaks from sanitation system to groundwater take place.</li> </ul>	Contractor, EO	Site inspections	Continuously	Contractor, EO	Daily and weekly inspections	Daily and weekly checklist
<ul style="list-style-type: none"> <li>Chemical sanitation facilities should not be positioned closer than 100m from surface water resources. The ratio of one toilet for every 15 workers on site should be maintained.</li> </ul>	Contractor, EO, HSE officer	Positioning of toilets	Once off at beginning of each phase	Project manager, Contractor, ECO / ESCO	Monthly	Visual inspection

### Spillage of fuel and lubricants from construction vehicles and machinery

<ul style="list-style-type: none"> <li>Construction vehicles should be serviced regularly to prevent or minimize the risk of spills or leakages of fuel and oil.</li> <li>If servicing of vehicles is done on site, it should be done at designated areas, within a bunded area with a hardened surface.</li> <li>All construction vehicles should be inspected for oil and fuel leaks regularly and frequently.</li> <li>Vehicles must be parked with spill pans underneath the vehicles.</li> <li>The storage of fuel, oils and lubricants must only take place where spillages can be controlled, in bunded areas.</li> </ul>	Contractor, Maintenance manager, ECO ESCO	Service records, instructions/training to drivers and visual checks. Maintenance at service centre or on site (emergency) as required.	Daily	Project manager, Contractor, ECO /ESCO	Monthly	Visual check Records check
<ul style="list-style-type: none"> <li>When a spill incident occurs all possible measures must be taken to ensure that spilled fuel or oil do not reach any drainage line. Water falling on areas polluted with oil/diesel or other hazardous substances must be contained.</li> <li>Any excess or waste material or chemicals should be removed from the site and discarded in an environmental friendly way.</li> <li>Spill incidents must be reported to the ESCO and ECO first. The ESCO and ECO will confirm if the spill requires to be reported to the DFFE and Free State Department of Economic, Small Business Development, Tourism</li> </ul>	Contractor, ECO ESCO	Handle the spill correctly	When spill takes place	Project manager ECO / ESCO	Monthly	Check spill records

## CONSTRUCTION PHASE

### GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

	Implementation	Monitoring
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Impact Management actions (mitigation measures)	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
and Environmental Affairs (DESTEA) in terms of Section 30(5) of NEMA.						

**Solid and domestic waste removal**

<ul style="list-style-type: none"> <li>An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, re-use, and disposal where appropriate. Any solid waste must be disposed of at a landfill licensed in terms of Section 20 (b) of the NEMA:WA (Act 59 of 2008) (as per condition 38 of the EA).</li> <li>Domestic waste must be kept in adequate wind-, water- and animal proof waste bins or storage cages and must be disposed of weekly at a registered municipal landfill site.</li> <li>Waste must be sorted and recycled as far as practically possible.</li> </ul>	Contractor	Continuous waste management plan	Weekly removal	Project manager/ECO / ESCO	Daily checking Weekly removal	Disposal records waste collection slips
<ul style="list-style-type: none"> <li>Ensure strict compliance that no foreign matter is deposited in trenches. Any foreign matter must be removed immediately.</li> </ul>	Contractor	Visual inspection before closure	Continuous	Project manager ECO / ESCO	Weekly	Spot checks

**CONSTRUCTION PHASE**

**GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Spillage/use of fuel in temporary fuel tanks as well as construction activities (e.g., mixing of concrete, cement, paints etc.)**

<ul style="list-style-type: none"> <li>Diesel storage must be <b>less</b> than 80000 litres at construction camps(higher volume will require Environmental Authorization).</li> </ul>	Contractor	Supply and erect surface tanks <80 000 litres	When required	Project manager/ ECO/ESCO	Weekly	Inspection log sheet Spot checks/photos
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**CONSTRUCTION PHASE**

**GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance



<ul style="list-style-type: none"> <li>The constructed bund must be able to hold 110% of the maximum allowable volume of the fuel tank.</li> <li>Fuel tank must be covered with a roof to minimise rainwater ingress.</li> <li>Drip pans should be used during re-fueling and servicing of construction vehicles. Drip pans can also be placed underneath stationary construction vehicles and equipment.</li> <li>Spilled fuel should be disposed of at the nearest approved fuel recycling collection point. Alternatively, an approved contractor can collect fuel waste and old oil to be taken to a licensed hazardous waste landfill site.</li> </ul>						
<ul style="list-style-type: none"> <li>Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Re-fueling on site must occur within a bunded area on a hardened surface. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained.</li> </ul>	Contractor	Supply drip trays and sheeting	Prior to any refueling	Project manager ECO / ESCO	Weekly	Photos
<ul style="list-style-type: none"> <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> </ul>	Contractor	Supply drip trays and sheeting	Prior to any refueling	Project manager ECO / ESCO	Weekly	Photos
<ul style="list-style-type: none"> <li>Mixing of cement, concrete, paints etc. must be done at designated areas in concrete aprons or on protected plastic linings to contain possible spillages into surface / groundwater resources. Excess concrete must be removed from the site and disposed of by a licensed and accredited service provider at a licensed waste collection site.</li> </ul>	Contractor	Supply protective material	When needed in construction	Project manager ECO / ESCO	Weekly	Spot checks/photos
<ul style="list-style-type: none"> <li>Accidental spillages must be contained and cleaned up promptly.</li> <li>Spill kits should be on-hand to deal with spills immediately.</li> </ul>	Contractor	Have spill kits available	When spills take place	Project manager ECO / ESCO	Monthly	Spill records
<ul style="list-style-type: none"> <li>Spillages or leakages must be treated according to an applicable procedure as determined by a plan of action for the specific type of disturbance.</li> </ul>	Contractor	Spills procedure available on site and communicate to workforce		Project manager ECO / ESCO	Monthly	Spill records

### CONSTRUCTION PHASE

#### GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Implementation

Monitoring

Impact Management actions (mitigation measures)	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>The temporary vehicle maintenance yard and storage area should be fenced off.</li> </ul>	Contractor	Fence off yard	Beginning of construction	Project manager/ ECO/ESCO	Weekly	Once off check
<ul style="list-style-type: none"> <li>Hazardous waste such as bitumen, oils, oily rags, paint tins and other used parts like filters should be contained and disposed of at an approved waste landfill site licensed to accept such waste.</li> </ul>	Contractor	Appoint contractor for disposal of parts	Beginning of construction Disposal when needed	Project manager ECO / ESCO	Monthly	Disposal records / Invoices and or receipts
<b>Storage and disposal of waste and littering on site</b>						
<ul style="list-style-type: none"> <li>Solid waste generated by the construction teams may not be burned on site or the surrounding areas. Solid waste should be kept in animal and weatherproof bins at the construction site</li> </ul>	Contractor	Supply waste containers Dispose of waste at	Continuously during construction	Project manager ECO / <u>ESCO</u>	Monthly	Check disposal records

## CONSTRUCTION PHASE

### GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Solid waste must be removed and taken to a licensed landfill or the Matjhabeng Local Municipality landfill site regularly, together with building rubble as the development progresses.</li> <li>Regular clean-up programs should be put into effect throughout the premises to limit the impact of littering caused by construction activities.</li> </ul>		The correct site Clean up site regularly	Daily cleaning			
<ul style="list-style-type: none"> <li>A comprehensive waste and recycling management plan should be compiled for the construction phase. The aim of the plan should be to ensure that the construction materials/debris generated on site be reduced, reused and recycled.</li> <li>This plan should be compiled in consultation with the contractors and engineers and must be implemented as indicated.</li> </ul>	Contractor	Waste management plan to be provided by the Contractor-	Start of construction	Project manager ECO / ESCO	Once off	Waste and recycling management plan records
<b>Storage of chemicals</b>						
<ul style="list-style-type: none"> <li>Chemicals should be stored on an impervious surface protected from rainfall and storm water run-off.</li> <li>Safety data sheets (MSDS) must be visible where chemicals are stored.</li> </ul>	Contractor	Correct storage of the chemicals	Continuously during construction	Project manager ECO / ESCO	Once off	Spot checking
<b>Storm water across cleared areas</b>						
<ul style="list-style-type: none"> <li>Clearance of vegetation should be restricted to 245ha development footprint.</li> <li>Construction activities must be restricted to the 245ha footprint.</li> </ul>	Contractor	Construction according to plans	During construction phase	Project manager ECO / ESCO	Weekly	Check construction against plan
<ul style="list-style-type: none"> <li>Cleared areas should be rehabilitated by reintroducing a grass layer as soon as reasonably practicable to limit the occurrence of water/wind erosion.</li> </ul>	Contractor	Vegetate area with grass layer	During construction	Project manager ECO / ESCO	Monthly	Checking Photo records

## CONSTRUCTION PHASE

### GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Slopes produced by removing of soil must be kept to a minimum to reduce the chances of erosion damage to the area.</li> </ul>	Contractor	Construction according to plans	Construction phase	Project manager ECO / ESCO	Monthly	Checking Photo records
<ul style="list-style-type: none"> <li>Trenches for pipes or cables must follow the shortest and most efficient possible route where reasonably practicable and in accordance with engineering constraints, to connect plant components (PV strings, MV stations, etc.).</li> <li>Where possible, construction of trenches must be dug next to roads where it will have the smallest impact. Any trenches dug for services to various buildings of PV plant must be filled up and compacted well and slightly higher than the areas around it.</li> <li>Construct sufficient outflow drains from roads.</li> </ul>	Contractor	Construction according to plans	During construction phase	Project manager ECO / ESCO	Monthly	Checking Photo records
<ul style="list-style-type: none"> <li>Monitor and repair any signs of erosion after heavy downpours.</li> </ul>	Contractor	Visual checks	After rainstorms	Project manager ECO / ESCO	Monthly	Visual checks
<b>The use of herbicides to control exotic invasive vegetation species</b>						
<ul style="list-style-type: none"> <li>Alien Invasive Management plan (included in EMPr) is applicable.</li> </ul>	Project Manager	Compile rehabilitation plan	Prior to construction	Project manager ECO / ESCO	Once off	Eradication and rehabilitation plan
<ul style="list-style-type: none"> <li>The use of eco-friendly products to control pests / vermin and invasive plants should be promoted and an ecologist be consulted before use.</li> </ul>	Contractor	Check type of products to use	Prior to use in construction phase	Project manager ECO / ESCO	During site meetings	Records of products used.

**WATER SUPPLY MANAGEMENT - CONSTRUCTION PHASE**

Impact Management outcome: Implement responsible water usage

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Construction activities and dust abatement along internal roads and at construction sites</b>						
<ul style="list-style-type: none"> <li>Water should be used sparingly and it should be ensured that no water is wasted.</li> <li>Roads should be irrigated with non-potable water. Where non-potable water is unavailable and all other dust mitigation measures (speed reduction for example) fail or dust becomes a significant issue on site, dust abatement chemicals can be utilised. <del>to</del> reduce the use of water. The use of a product like Ecobond is recommended as opposed to water. However, it should be an inert product with no pollution risk.</li> <li>Washing of construction vehicles should be limited and must be done with high pressure sprayers to reduce water consumption.</li> <li>Water tanks should be inspected to ensure no leaks occur.</li> <li>Construction workers must be educated on the importance and ways to use water sparingly.</li> </ul>	Contractor	Keep water use records  Training of workers in water saving	Continuous	Project manager ECO / ESCO	Monthly	Visual checks
<b>Water use by exotic invasive plant species</b>						
<ul style="list-style-type: none"> <li>Current exotic weed species should be eradicated, increasing water seepage towards the surface and groundwater resources.</li> </ul>	Contractor	Program of eradication of weeds	Continuous during construction	Project manager ECO / ESCO	Monthly	Spot checks

## SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Operation of construction vehicles and machinery &amp; Fuel storage (leakages)</b>						
<ul style="list-style-type: none"> <li>Construction vehicles must be well serviced and maintained regularly according to manufacturers' specifications to prevent oil and fuel leaks.</li> <li>All construction vehicles should be inspected for oil and fuel leaks regularly and frequently.</li> <li>Temporary vehicle maintenance yard and storage area must be fenced off.</li> </ul>	Contractor	Maintenance of vehicles	According to schedule	Project manager ECO / ESCO	Monthly	Records
<ul style="list-style-type: none"> <li>Used parts like filters should be contained and disposed of at a site licensed for dumping of these waste products.</li> </ul>	Contractor	Disposal at correct site	As maintenance is done	Project manager ECO / ESCO	Monthly at site meetings	Records
<ul style="list-style-type: none"> <li>Machinery must be serviced and re-fuelled at existing facilities as far as is possible.</li> </ul>	Contractor	Instructions to drivers	Continuously	Project manager ECO / ESCO	Monthly	Records
<ul style="list-style-type: none"> <li>Prevent spillage of fuel or oil onto the soil, and put in place measures to ensure that any accidental spillages can be contained and cleaned up promptly.</li> <li>Any spills must be treated and removed by a qualified agent/company.</li> </ul>	Contractor	Clean-up	When applicable	Project manager ECO / ESCO	Monthly	Records
<ul style="list-style-type: none"> <li>Diesel storage must be <b>less</b> than 80000 litres at construction camps.</li> <li>A bund wall should be constructed around the fuel tank structures and the run-off diverted to a conservancy tank.</li> <li>The spilled fuel should be disposed of at the nearest approved fuel recycling collection point. Alternatively drip pans can be placed underneath temporary fuel tanks.</li> <li>Drip pans should be used when refuelling and servicing construction vehicles or equipment.</li> </ul>	Contractor	Supply and erect surface tanks <80 000 litre	When required	Project manager ECO / ESCO	Weekly	Inspection log sheet Spot checks/photos Disposal records

**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Drip pans must be placed underneath stationary vehicles.</li> <li>Used or spilled oil should be taken to the nearest oil refiner or recycling plant for recycling.</li> </ul>						
<ul style="list-style-type: none"> <li>Spill kits should be at-hand to deal with spills immediately.</li> </ul>	Contractor	Keep spill kits on site	When required	Project manager / ECO / ESCO	Weekly	Inspection log sheet. Spot checks/photos
<b>Spillage from temporary chemical toilets</b>						
<ul style="list-style-type: none"> <li>Chemical sanitation facilities should be used on site and regularly serviced by registered companies to ensure that no spills or leaks from toilets to groundwater or surface water take place. The ratio of one toilet for every 15 workers on site should be maintained.</li> </ul>	Contractor	Appoint service contractor	Weekly	Project manager	Monthly	Spot checks

## SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>The temporary sanitation system in the construction site should be regularly inspected to ensure that no spills or leaks from sanitation system to groundwater take place.</li> <li>Plan and execute groundwater management plan around the selected site to protect the already vulnerable aquifer. (Should be submitted with WULA for approval)</li> </ul>						
<b>Increase in storm water run-off - soil erosion</b>						
<ul style="list-style-type: none"> <li>Cleared areas should be re-vegetated allowing a grass layer to re-establish as soon as possible to limit erosion.</li> <li>Minimize land disturbance.</li> <li>Ensure that exposed bare soil is minimized by staging earthworks in phases and leaving as much ground cover intact as far as reasonably practicable possible during construction.</li> <li>Develop and implement stringent erosion and dust control practices.</li> <li>The clearing of the site should be done in phases as the construction progresses, as far as reasonably practicable and as per the scheduling requirements of the contractor. An efficient erosion control and slope- stabilizing program should be designed and implemented along the steep slopes of the site to reduce the risk of erosion.</li> <li>Conservation of topsoil must be prioritized on site.</li> <li>Slopes produced by removing of soil must be kept to a minimum to reduce the chances of erosion damage to the area.</li> </ul>	Contractor	Construction according to plans. Follow revegetation plans	Construction phase. Continuous rehabilitation	Project manager ECO / ESCO	Weekly	Check construction against plan
<ul style="list-style-type: none"> <li>Monitor and repair any signs of erosion after heavy downpours.</li> </ul>	Contractor	Visual checks Repair erosion	After rainstorms	Project manager/ECO / ESCO	Monthly	Visual checks



## SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Institute a storm water management plan.</li> <li>Have both temporary (during construction) and permanent erosion control plans.</li> </ul>	Contractor	Institute stormwater plans	Prior to Construction	Project manager ECO / ESCO	Monthly	Visual Checks
<ul style="list-style-type: none"> <li>Sufficient drainage should be provided along access roads to prevent erosion and pollution of adjacent watercourses or wetlands.</li> <li>Dust suppression measures must be implemented during the construction phase to minimise potential impacts to the characteristics of the receiving freshwater ecosystems (flow regime, habitat, biota, water quality and geomorphological regime);</li> <li>undertaken based on the inspection findings; and</li> <li>Whilst some mitigation measures for the control of alien invasive species are provided, it is strongly recommended that a detailed, site specific control plan be developed by a suitably qualified specialist to ensure that specific species are managed according to the most effective protocols for those species.</li> <li>Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and ECO and/or ESCO.</li> </ul>	Contractor	Construct roads with drainage according to plans	During construction phase	Project manager ECO / ESCO	Monthly	Visual checks
<ul style="list-style-type: none"> <li>Training with regards to stormwater management of construction personnel must be undertaken as part of their induction.</li> </ul>	Contractor	Training and induction program	Prior to working on site	Project manager ECO / ESCO	Weekly	Check records

**Solid waste accumulation on/in soil. Storage and disposal of building rubble, waste and littering on site**

<ul style="list-style-type: none"> <li>• Solid waste must be kept in adequate animal-proof waste bins (scavenger and weatherproof) at the construction camp and at the construction sites. Building rubble and waste should be removed on a regular basis to a licensed landfill or the Matjhabeng Local Municipality's landfill site.</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 sorted into separate bins and clearly marked for each waste type for recycling and safe disposal.</li> <li>• Staff must be trained in sorting of waste.</li> </ul>	Contractor	Continuous implementation of waste management plan	Weekly removal	Project manager ECO / ESCO	Monthly	Records of waste disposal to be kept.
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**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>A comprehensive waste management plan should be compiled for the construction phase to ensure that construction waste on site be removed, reduced, reused and recycled. Regular clean-up programs should be put into effect throughout the premises to limit the impact of littering caused by construction activities.</li> </ul>						

**Handling/use/storage of dangerous substances (spillages)-Storage of chemicals/fuels on site**

<ul style="list-style-type: none"> <li>Chemicals to be stored in a bunded area on an impervious surface protected from rainfall and storm water run-off.</li> </ul>	Contractor	Supply safe, protected storage for chemicals and drip trays and sheeting as needed	When required	Project manager ECO / ESCO	Monthly	Inspection log sheet
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**Excavation for cabling and pipes laying**

<ul style="list-style-type: none"> <li>Trenches for pipes or cables will be constructed following the shortest and the most efficient possible route, where reasonably practicable and in accordance with engineering constraints, in order to connect all plant components (PV strings, MV substations <i>etc.</i>), where possible the construction of this trenches will be dug next to the roads where it will have the smallest impact.</li> <li>Any trenches dug for the supply of services to buildings of the PV plant must be filled up and compacted well and slightly higher than the areas around it. This would allow for settling of the soil without trenches or erosion gullies forming again.</li> <li>Repair all erosion damage as soon as possible, to be advised by the ECO and ESCO and the Ecological specialist.</li> <li>Sufficient drainage should be provided along access roads to prevent erosion and pollution.</li> </ul>	Contractor	Follow construction plans	Construction phase	Project manager ECO / ESCO	Weekly	Visual checks Photo records
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**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Assembly and installation of towers</b>						
<ul style="list-style-type: none"> <li>• Prior to installation, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation.</li> <li>• In sensitive areas, tower assembly must take place off-site or away from sensitive positions.</li> <li>• The crane used for tower assembly must be operated in a manner which minimises impact to the environment.</li> <li>• The number of crane trips to each site must be minimised</li> <li>• Wheeled cranes must be utilised in preference to tracked cranes.</li> <li>• Access to tower positions to be done in accordance with access requirements.</li> <li>• Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section: Vegetation clearing.</li> <li>• No levelling at tower sites must be permitted unless approved by Site Manager.</li> <li>• Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites.</li> <li>• Topsoil must be stored in heaps not higher than 2m to prevent destruction of the seed bank within the topsoil.</li> <li>• Excavated slopes must be no greater than 1:3, but where unavoidable, slopes must be stabilised.</li> <li>• Fly rock from blasting must be minimised and pieces greater than 150 mm falling beyond the site, must be collected and removed.</li> <li>• Only existing disturbed areas must be utilised as spoil areas.</li> <li>• Surface water runoff is appropriately channeled through or around spoil areas.</li> </ul>	Contractor	Follow construction plans	Construction phase	Project manager ECO / ESCO	Weekly	Visual checks Photo records

**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>• During backfilling operations, care must be taken not to dump topsoil at the bottom of a foundation and then put spoil on top.</li> <li>• The surface of the spoil must be rehabilitated in accordance with the requirements specified in this EMPr.</li> <li>• Retained topsoil must be spread evenly over rehabilitation areas and compacted to effect re-vegetation of areas and prevent erosion as soon as construction activities are complete. Spreading of topsoil must not be done, beginning of the dry season.</li> </ul>						

**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Handling of soils**

<ul style="list-style-type: none"> <li>• Soil should be handled when dry during removal and placement to reduce the risk of compaction.</li> <li>• During construction, sensitive soils with high risk of compaction (e.g. clayey soils) must be avoided by construction vehicles and equipment, wherever possible, to reduce potential impacts.</li> <li>• Topsoil should not be compacted in any way, nor should any object be placed or stockpiled upon it.</li> <li>• Stockpile topsoil for a minimum time period <i>i.e.</i> strip just before the activity commences and replace as soon as completed.</li> <li>• Stockpile topsoil separately from subsoil.</li> <li>• Stockpile in an area protected from storm water runoff and wind.</li> <li>• Topsoil stockpiles should not exceed 2.0 m in height and should be protected by a mulch cover where possible.</li> <li>• Maintain topsoil stockpiles in a weed free condition.</li> <li>• Direct storm water past stockpiles by designing stormwater ditches.</li> </ul>	Contractor	Handle according to Procedure	Construction phase	Project manager ECO / <u>ESCO</u>	Monthly	Visual Checks
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**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - CONSTRUCTION PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Geo-technical characteristics of soils at sites**

<ul style="list-style-type: none"> <li>• The recommendations with regard to the geo-technical characteristics of the underlying soils should be adhered to.</li> </ul>	Contractor	Handle soils according to Geotechnical report	Construction phase	Project Manager	Monthly	Check development according to layout plans
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**ECOLOGY - CONSTRUCTION PHASE**

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Earthworks and vegetation clearance-loss of protected plants/other vegetation**

<ul style="list-style-type: none"> <li>Clearance of vegetation and construction activities should be restricted to the proposed 245 ha footprint.</li> <li>No-go areas should apply should the walk over reveal red data species.</li> </ul>	Contractor	Demarcate/ fence development and no-go areas	Before construction phase	Project manager ECO / <u>ESCO</u>	Weekly	Visual inspection
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**ECOLOGY - CONSTRUCTION PHASE**

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Care must be taken that unnecessary clearance of natural vegetation does not take place. Restrict it to the footprint area.</li> <li>During construction, sensitive habitats must be avoided by construction vehicles and equipment, wherever possible, in order to reduce potential impacts.</li> <li>Trenches pose a risk to ground-living animals and must be cordoned off and backfilled as soon as possible during construction to prevent animals from falling into the trenches.</li> <li>Clearly demarcate the entire development footprint prior to initial site clearance and prevent construction personnel from leaving the demarcated area.</li> </ul>						
<ul style="list-style-type: none"> <li>Cleared areas should be re-vegetated allowing a grass layer to re-establish as soon as possible to limit erosion.</li> <li>Unnecessary driving around in the veld or bulldozing natural habitat must not take place.</li> <li>The herbaceous layer <del>should</del> can be revived after clearance of vegetation and actively managed through slashing during its lifetime of the project to help prevent fires in the panel area. This is a recommendation and not a requirement.</li> </ul>	Contractor	Rehabilitation with grass layer	After each clearing phase and construction	Project manager ECO / ESCO	Weekly	Visual inspection
<ul style="list-style-type: none"> <li>Where reasonably practicable, clearance of vegetation should be done in phases and concurrent rehabilitation of impacted areas surrounding the site could also be implemented to ensure areas are kept as natural as possible.</li> <li>At the end of construction all equipment and infrastructure used for construction purposes should be removed.</li> </ul>	Contractor	Schedule clearance and rehabilitation roster	Prior to each clearing phase	Project manager ECO / ESCO	Weekly/daily	Visual inspection

<ul style="list-style-type: none"> <li>Monitoring for the construction phase to "ensure minimal impacts on ecology is to be undertaken by the ESCO".</li> <li>Bird nests found in this phase must be reported to the ESCO on site first and the Avifaunal Specialist, and then the ECO must be notified.</li> </ul>	Project Manager	Compile monitoring plan	During construction phase	Project manager ECO/ ESCO	Weekly/daily	Visual inspection
<ul style="list-style-type: none"> <li>No protected plants should be removed without authorisation from Free State Nature Conservation.</li> </ul>	Project Manager	Apply for permits.	Prior to construction	Project Manager ECO/ ESCO	Weekly/Daily	Visual inspection.

### ECOLOGY - CONSTRUCTION PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>The project should comply with the Free State Nature Conservation Laws.</li> </ul>						
<ul style="list-style-type: none"> <li>The ECO and ESCO should advise the construction team in relevant matters to ensure minimum destruction and damage to the environment.</li> <li>The ECO and ESCO should enforce any measures that he/she deem necessary. Regular environmental training should be provided to workers to ensure protection of habitat, fauna and flora.</li> </ul>	ECO/ ESCO	ECO/ ESCO site visits and training sessions	Prior to and ongoing during construction phase	Project manager & ECO/ <u>ESCO</u>	Monthly	Visual inspection & monitoring reports

### Vegetation clearance and the use of herbicides to control re-growth-Inappropriate use of herbicides and pesticides

<ul style="list-style-type: none"> <li>Herbicides used to control invasive plants should be chosen in consultation with an ecologist.</li> </ul>	Contractor	Liaison with Ecologist	Construction phase	Project manager & ECO/ <u>ESCO</u>	Weekly	Herbicide application Records
<ul style="list-style-type: none"> <li>Exotic and invasive plants must be eradicated as construction progresses.</li> <li>Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive species would be at a strong advantage and most easily able to establish.</li> <li>The Alien Management Plan (AIMP)_must monitor and detect alien invasive species early before they can become established, and in case of the weeds, before they become established</li> <li>Institute strict control over materials brought onto site, which should be inspected for potential invasive invertebrate species and steps taken to eradicate these before transport to the site.</li> <li>Institute the AIMP on site for early intervention if invasive species are</li> </ul>	Contractor	Alien Invasive Management Plan	During construction phase	Project Manager ECO/ ESCO	When required	Photo records Site inspection records



detected, so that their spread to surrounding natural ecosystems can be prevented.						
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**ECOLOGY - CONSTRUCTION PHASE**

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>The ECO / <u>ESCO</u> should regularly inspect the site, including storage facilities and compounds and eradicate any invasive or exotic plants and animals.</li> </ul>						

**Impact on avifauna population**

<ul style="list-style-type: none"> <li>All construction and maintenance activities must be carried out according to generally accepted environmental best practice and the temporal and spatial footprint of the development should be kept to a minimum.</li> <li>The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.</li> <li>The appointment of a competent Environmental Control Officer (ECO) is imperative.</li> <li>Where reasonably practicable, It is recommended that construction be carried out after the breeding season.</li> <li>Construction workers should not be accommodated on site and when on site contactors and working staff should stay within development footprint and movement outside these demarcated areas must be restricted.</li> <li>Provide adequate briefing for site personnel.</li> <li>Speed limit of 30 km/h on site to avoid collisions with night birds and twilight active birds.</li> <li>Poisons for control of problem animals should be avoided since the wrong use thereof can have disastrous consequences for the</li> </ul>	Contractor	<p>Construction of infrastructure according to approved plans.</p> <p>Poisons must be according to specialists' instructions</p>	<p>When applicable Only when there is no other way of getting rid of the problem animals</p>	Project manager ECO/ ESCO	Monthly	<p>Check plans</p> <p>Check poisons used</p>
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**ECOLOGY - CONSTRUCTION PHASE**

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<p>raptors in the area. The use of poisons for the control of rats, mice or other vermin can only be used after approval from an ecologist.</p> <ul style="list-style-type: none"> <li>The breeding sites of raptors and other wild birds species must be taken into consideration during the construction phase.</li> <li>If present at connection infrastructure site, breeding sites must be kept intact and disturbance to breeding birds must be avoided. Care must be taken where nestlings or fledglings are present.</li> <li>Nesting sites on site must documented.</li> <li>Lighting of the solar farm (for example security lights) should be kept to a minimum. Lights should be directed downwards (using low-UV type lights) to prevent night birds such as owls from becoming confused during flight and colliding with solar panels and infrastructure.</li> </ul>						
<ul style="list-style-type: none"> <li>The use of owl boxes and bat hotels as biological pest control measures is recommended as an alternative to poisons in this instance. This would serve to prevent owls and other birds from perching on solar panels.</li> <li>Regular cleaning and maintenance activities should prevent defecation on the panels from becoming a problem. Eco-friendly bird deterring devices could also prevent large birds from perching on the panel structures.</li> </ul>	Contractor	Construct in logical positions and protect from human activities	When applicable	Project manager ECO/ ESCO	Monthly	Inspection log sheet
<b>ECOLOGY - CONSTRUCTION PHASE</b>						
Impact Management outcome: Minimise and control impact to the ecological aspects during construction.						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

<ul style="list-style-type: none"> <li>• All incidents of collision with panels should be recorded as meticulously as possible using good scientific protocols.</li> <li>• If birds are nesting on the infrastructure of the facility and cannot be tolerated, birds should be prevented from accessing nesting sites by using mesh or other manner of excluding them.</li> <li>• If there are persistent problems with avifauna, then an avifaunal specialist should be consulted for advice on further mitigation.</li> <li>• An area conducive to raptors being present will aid in the containment of snakes occurring in the area.</li> <li>• ESCO <del>ECO</del> should be trained in collecting information w.r.t bird collision cases and carcass counting</li> <li>• All probable and high risk perching surfaces should be fitted with bird guards and perch guards as deterrents.</li> <li>• Where possible the installation of artificial bird space perches or platforms at a safe distance from energized components is advised.</li> <li>• Recommended bird diverters such as brightly coloured ‘aviation’ balls or flapping devices should be installed and luminescent light emission reflector devices or solar powered night deterrents for nocturnal birds or night-flying diurnal species.</li> </ul>	Contractor, ECO, ESCO, Project Manager, Avifaunal Specialist	Site observations, Collusion counts, carcass counting (if required)	Construction	Contractor, ECO, ESCO, Project Manager, Avifaunal Specialist	Weekly	Collision record, carcass counting record (If required)
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**ECOLOGY - CONSTRUCTION PHASE**

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Control of animals on site. Killing, poisoning, or hunting of animals**

<ul style="list-style-type: none"> <li>• No animals may be killed, captured or hunted or fed on site by construction workers. No poison should be used to control any animals without the input of an ecologist/zoologist.</li> <li>• Limit pesticide use to non-persistent, immobile pesticides and apply in accordance with label and application permit directions and stipulations since the wrong use thereof can have disastrous consequences for the raptors occurring in the area.</li> <li>• The use of poisons for the control of rats, mice or other vermin should only be used after approval from an ecologist.</li> <li>• Instruct employees, contractors, and site visitors to avoid harassment and disturbance of wildlife.</li> <li>• No pets must be allowed on the site.</li> <li>• If a dangerous animal and/or venomous snake is encountered, the safety officer on site should always be consulted to ensure the safety and well-being of all employees. Procedure to follow during such an encounter must be addressed during the induction done for every person entering the site.</li> </ul>	Contractor Health and Safety Officer	Fine for transgressors Apply according to label  Training of work force	When applicable	Project manager ECO / ESCO	Weekly	Incident logs  Check pesticides log  Training records
<ul style="list-style-type: none"> <li>• Where trenches pose a risk to animal safety, they should be adequately cordoned off to prevent animals falling in and being trapped and/or injured. This could be prevented by the constant excavating and backfilling of trenches during construction.</li> </ul>	Contractor	Close trenches	When work in trench is done	Project manager ECO/ ESCO	Weekly	Visual checks
<ul style="list-style-type: none"> <li>• A register must be kept of all relevant details of herbicide and pesticide usage.</li> </ul>	Contractor	Draw up register	When applicable	Project manager ECO/ ESCO	Monthly	Inspection log sheet

**ECOLOGY - CONSTRUCTION PHASE**

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Occurrence of veld fires on site</b>						
<ul style="list-style-type: none"> <li>Cleared vegetation may not be burned on site and must be stockpiled and taken to closest available landfill site.</li> <li>Educate construction workers regarding risks and correct disposal of cigarettes.</li> <li>A designated smoking area within the project area must be provided, where the fire hazard and risk is insignificant and should have a fireproof sand filled container for extinguishing cigarettes. Smoking shall be prohibited across the site and in the work areas.</li> <li>Fires will only be allowed in designated places. No open fires are allowed but small fires, if authorized, for cooking should be restricted to designated areas, care should be taken to ensure prevention of veld fires from occurring. Cooking facilities within a designated area needs to be provided.</li> <li>A fire hydrant system should be designed and installed.</li> </ul>	Contractor	Training & keep site clean of cleared vegetation  Check incidence of open fires and cooking within designated areas	Weekly  Daily	Project manager ECO/ ESCO Health & Safety Officer	Monthly  Daily	Training records & visual inspection records.
<ul style="list-style-type: none"> <li>Portable firefighting equipment must be provided at strategic locations throughout site, in line with the building Code of South Africa and relevant provincial building codes. All emergency equipment including portable fire extinguishers, hose reels and hydrants must be maintained and inspected by a qualified person according to relevant legislation and national standards.</li> </ul>	Contractor	Training on using firefighting equipment	At start of construction	Health & Safety Officer	As per the standards	Monitoring records
<ul style="list-style-type: none"> <li>Each employee, subcontractor or any other visitor should be made aware of the provisions of the fire management plan and is made familiar of the location and proper use of firefighting equipment as well as the location of assembly points.</li> </ul>	Health & Safety Officer	Fires safety awareness and training	Ongoing	Health & Safety Officer	Ongoing	Training and induction records
<ul style="list-style-type: none"> <li>Fire Management training for all staff about the correct steps to take in case of an accidental fire, including the report of a fire as well as the use of the available equipment.</li> </ul>	Health & Safety Officer	Fires safety awareness and training.	Monthly	Health & Safety Officer	Monthly	Training records

## ECOLOGY - CONSTRUCTION PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Contact numbers for the Fire Protection Agency (FPA), if in place and emergency services must be communicated in training programmes and displayed at a central location on site.</li> </ul>						
<ul style="list-style-type: none"> <li>Fire occurrence emergency protocol training.</li> <li>The local FPA must be informed of construction activities.</li> </ul>	Project manager ECO/ ESCO	Fire emergency drill tests	From April until October, every two months	Project manager ECO/ ESCO	From April until October, every two months	Records of training
<ul style="list-style-type: none"> <li>Make and maintain proper firebreaks wide enough to prevent fires from crossing and monitoring of fire breaks around development footprint. Firebreaks must comply with National Veld and Forest Fire Act, 1998 (Chapter 4).</li> </ul>	Contractor	Make fire breaks according to standards	Once-off Maintain as necessary	Project manager ECO/ ESCO	Monthly	Visual inspection
<ul style="list-style-type: none"> <li>The establishment and proliferation of Alien Invasive Plants (AIP) at the firebreaks should be monitored.</li> </ul>	Contractor	Assess fire break and establishment of alien vegetation	Quarterly, especially during the dry season	ECO/ ESCO	Quarterly, especially during the dry season	Records of Monitoring
<ul style="list-style-type: none"> <li>Fire risk should be reduced by removing dry vegetation and combustible materials from hazardous material storage areas, cooking areas, smoking areas or equipment that may create a spark. Grass should be slashed under and around the PV plant.</li> </ul>	Contractor	Removal of dry vegetation or combustible material	Daily	ECO/ ESCO	Daily	Records of Monitoring
<ul style="list-style-type: none"> <li>Local firefighting/fire protection agencies should be contacted in order to establish a relationship and shall have access to the solar park and the access road should allow any relevant fire fighting vehicle/truck to travel without hinder should it be necessary.</li> </ul>	Contractor	Provide access to the solar park	Ongoing when needed	ECO/ ESCO	Ongoing	Entry records
<ul style="list-style-type: none"> <li>Adjacent landowners must be informed in the case of any fire.</li> </ul>	Contractor ECO/ ESCO	Inform the landowners	In case of fire	Site Manager	In case of fire	Incident records
<ul style="list-style-type: none"> <li>A Fire Prevention and Fire Emergency Method should be in order and limited to the following:                             <ul style="list-style-type: none"> <li>Fire Fighting training for designated site staff;</li> <li>Sources of fire risk and hazards</li> <li>How to comply with requirements of local fire departments and standards;</li> </ul> </li> </ul>	Contractor Health and Safety officer	Compile, make available and training of the Fire Prevention and Fire Emergency Method	Ongoing	Health and Safety officer	Ongoing	Training records.

## ECOLOGY - CONSTRUCTION PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>○ How to minimise the risk of accidental fires;</li> <li>○ How to control accidental fires;</li> <li>○ Appropriate distance to stand away from PV system to avoid electrocution.</li> </ul>						
<ul style="list-style-type: none"> <li>• The solar park should be part of or form a Fire Protection Association (FPA). (<a href="https://www.fpasa.co.za/">https://www.fpasa.co.za/</a>)</li> </ul>	Contractor	Apply for membership of FPA	Ongoing	ECO/ ESCO	Ongoing	
<ul style="list-style-type: none"> <li>• Routine checking of all the connections and panels.</li> </ul>	Contractor Electrician	Physical testing and checking of equipment.	Ongoing	Electrician	Ongoing Yearly check of connections	Monitoring records
<ul style="list-style-type: none"> <li>• Mobile electrostatic equipment must be used to ensure the system is grounded correctly.</li> </ul>	Contractor Technician	Ground equipment as per standards		Technician	Monthly	Monitoring records Presence of electrostatic reading
<ul style="list-style-type: none"> <li>• Check for animals and nests in the PV system</li> </ul>				ECO/ ESCO	Bi-Weekly	Monitoring records
<ul style="list-style-type: none"> <li>• Lightning rods must be installed as per national guidelines.</li> </ul>	Contractor	Install rods as per guidelines	Ongoing	Contractor	Ongoing	
<b>Increase in traffic on the site</b>						
<ul style="list-style-type: none"> <li>• Speed of construction vehicles on internal roads should be kept as low as possible (30 km/h) to reduce incidence of road kill.</li> <li>• Use existing roads to minimise new disturbance in the area, where possible and as advised by the ESCO/ECO.</li> <li>• Construction activities must remain within defined construction areas and the road servitudes.</li> </ul>	Contractor	Speed checks to Fines transgressors	Construction phase	Project manager ECO/ ESCO	Monthly	Visual inspection
<b>Construction of roads with a kerb &amp; Fragmentation of available habitat &amp; restriction of movement of small mammals, reptiles and amphibians</b>						
<ul style="list-style-type: none"> <li>• Internal roads should be constructed without a kerb or with an angle of approximately 45°, where possible and where the design permits. This will allow for the free movement of small faunal species throughout the development area.</li> </ul>	Contractor	Construction of roads according to plans	Construction phase	Project manager	Monthly	Visual check against plans

## ECOLOGY - CONSTRUCTION PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Ensure protection of important resources by establishing protective buffers to exclude unintentional disturbance.</li> <li>Use existing facilities (e.g., access roads, degraded areas) to the extent possible to minimize the amount of new disturbance.</li> <li>Sensitive habitats must be avoided by construction vehicles and equipment, where possible, in order to reduce potential impacts.</li> </ul>	Contractor	Construction according to plans to stay out of sensitive areas. Demarcate sensitive areas.	Beginning and during Construction phase	Project manager ECO/ ESCO	Monthly	Visual check against plans
<b>Materials brought onto site-Spreading of invasive animal species</b>						
<ul style="list-style-type: none"> <li>Institute strict control over materials brought onto site, which should be inspected for potential invasive invertebrate species and steps taken to eradicate these before transport to the site.</li> </ul>	Contractor ECO/ ESCO	Check materials during off loading	In construction phase	ECO/ ESCO	During offloading.	Visual Check of materials
<ul style="list-style-type: none"> <li>Institute an eradication/control programme for early intervention if invasive species are detected, so that their spread to surrounding natural ecosystems can be prevented.</li> </ul>	Contractor	Implement Eradication programme	Beginning of construction phase	Project Manager ECO/ ESCO	Beginning of construction Monthly	Visual checks
<ul style="list-style-type: none"> <li>Monitor alien invasive species monthly during the rainy season.</li> <li>ESCO and ECO should regularly inspect the site, including storage facilities and eradicate any invasive or exotic plants and animals.</li> <li>The ESCO and ECO should be in attendance with every delivery at the construction site. The ESCO and ECO should also sign the delivery register to indicate attendance and inspection of delivered goods.</li> </ul>	Contractor	Walk over monitoring	Monthly – during rainy season	Project manager ECO/ ESCO	Monthly	Visual inspection
<b>Littering (e.g. cans &amp; plastics) along access road &amp; at construction sites</b>						
<ul style="list-style-type: none"> <li>Solid waste must be kept in adequate animal and weatherproof waste bins at the construction camp and construction sites.</li> <li>Building rubble and various wastes should be removed on a regular basis to a licensed landfill, or the Matjhabeng Local Municipality's landfill site.</li> <li>A recycling program must be designed in order to minimise production of solid waste (e.g. organic waste made into compost,</li> </ul>	Contractor	Removal of waste to licensed disposal site  Regular site clean-up programs	During construction phase	Project Manager ECO/ ESCO	Daily Weekly	Disposal records



## ECOLOGY - CONSTRUCTION PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during construction.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<p>the rest will be sorted and taken to various recycling stations in the Matjhabeng Local Municipality, if available).</p> <ul style="list-style-type: none"> <li>Regular clean-up programs should be put into effect along access road and throughout the premises to limit impact of littering.</li> </ul>						

## VISUAL DISTURBANCE - CONSTRUCTION PHASE

Impact Management outcome: Prevent unnecessary negative visual impact by ensuring that visual impacts are mitigated.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Construction activities and temporary structures-visual impact.

<ul style="list-style-type: none"> <li>Earth works should be executed in such a way that only the footprint and a small 'construction buffer zone' are exposed. In all other areas, natural occurring vegetation, and indigenous vegetation should be retained.</li> </ul>	Contractor	Walk over monitoring	Monthly	Project manager ECO/ ESCO	Monthly	Visual inspection
<ul style="list-style-type: none"> <li>Materials and colours used in construction of structures and infrastructure should give preference to natural and eco-friendly choices, to minimize visual impact on aesthetic character of area.</li> </ul>	Contractor	Walk over monitoring	Monthly	Project manager ECO/ ESCO	Monthly	Visual inspection
<ul style="list-style-type: none"> <li>No waste may be burned on site.</li> </ul>	Contractor	Instruction to personnel	Daily	Project manager ECO/ ESCO	Monthly	Visual inspection
<ul style="list-style-type: none"> <li>Minimum amount of existing vegetation and topsoil should be removed. Specifically, large trees should be saved were possible.</li> <li>Stockpiled topsoil must be used during rehabilitation phase of disturbed areas and re-vegetation of the earth berm. The presence of degraded areas and disused construction roads, which are not rehabilitated, will increase the overall visual impact.</li> </ul>	Contractor	Instruction to personnel	Daily	Project manager ECO/ ESCO	Monthly	Visual inspection

## VISUAL DISTURBANCE - CONSTRUCTION PHASE

Impact Management outcome: Prevent unnecessary negative visual impact by ensuring that visual impacts are mitigated.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>• Construction camp, waste and storage areas and placement of ablution facilities, must be screened or positioned in areas less visible from human settlements and main roads.</li> <li>• Construction activities should be limited to 08:00 and 17:00, where reasonably practicable.</li> <li>• Construction activities must be restricted to specifically demarcated areas.</li> <li>• Building or waste material disposal should be undertaken at an authorised location, which should not be within any sensitive areas.</li> <li>• Pole mounted CCTV facilities should be located 'in rhythm' with other project components.</li> <li>• All cut and fill slopes and areas affected by construction work must be steadily top soiled and re-vegetated as soon as possible.</li> <li>• Soil exposure must be for the minimum time possible once cleared of vegetation to avoid prolonged exposure to wind and water erosion and to minimise dust generation.</li> <li>• Progressive rehabilitation of all construction areas should be carried out immediately after they have been established.</li> <li>• <u>Where possible</u>, paint structures with colours that reflect and compliment colours of surrounding landscape. To reduce potential glare, external surfaces of structures should be articulated or textured to create interplay of light and shade. Avoid pure whites and blacks.</li> <li>• Ensure the perimeter fence, is 'see through' and that its colour blends with the environment.</li> <li>• "Housekeeping" procedures should be developed to ensure the project site and lands adjacent to the project site are kept clean of debris, garbage, graffiti, fugitive trash, or waste generated onsite.</li> </ul>						

**VISUAL DISTURBANCE - CONSTRUCTION PHASE**

Impact Management outcome: Prevent unnecessary negative visual impact by ensuring that visual impacts are mitigated.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>• During construction, temporary fences surrounding the material storage yards and laydown areas should be covered with cloth (khaki coloured).</li> <li>• Install light fixtures that provide precisely directed illumination to reduce light “spillage” beyond immediate surrounds of the site.</li> <li>• Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on illegal entry to site.</li> <li>• Minimise the number of light fixtures including security lighting to the minimum.</li> </ul> <p>With regards to the construction camp:</p> <ul style="list-style-type: none"> <li>• Refrain from causing ‘light spillage’ beyond the construction camp by installing light fixtures with directional illumination.</li> <li>• Keep lighting to a minimum by installing low-level bollard type lights instead of post top lights along walkways between buildings.</li> <li>• Where possible avoid high flood lights, and instead use lower locally lit installations.</li> <li>• In general, lighting should be carefully directed and only be used where absolutely necessary.</li> </ul> <p>Should construction activities extend during night-time, adhere to the same recommendations as for the construction camp.</p> <p>Visual impact of clearing of vegetation for the construction camp, access roads and project footprint:</p> <ul style="list-style-type: none"> <li>• During the field work and impact assessment it was noted that the existing vegetation would play a minimal role in screening the proposed project components from Visual Sensitive Receivers VSRs. However, care should still be taken to:</li> <li>• Retain as much of the existing vegetation as possible.</li> <li>• Where vegetation is cleared, a rehabilitation plan should be implemented. This should be done in conjunction with the Vegetation, Visual Impact and any other relevant specialists</li> </ul>						

<ul style="list-style-type: none"> <li>Where possible and required, careful placement of new or transplanted vegetation should be planted in areas relevant to VSR site lines.</li> </ul>						
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**HERITAGE RESOURCES - CONSTRUCTION PHASE**

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Earthworks and excavations**

<ul style="list-style-type: none"> <li>Halt construction and notify the archaeologist or SAHRA whenever anything of potential heritage value is discovered.</li> <li>The area should be cordoned off and no access should be allowed to the site until the archaeologist has indicated that it is in order to do so.</li> </ul>	Contractor	Halt construction Call Archaeologist	When required	Project manager ECO/ ESCO	When required	Incident log sheet
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**SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - CONSTRUCTION PHASE**

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Construction activities - safety of employees</b>						
<ul style="list-style-type: none"> <li>The Contractor shall conform to all the stipulations of the Occupational Health and Safety act, 1993 (Act No. 85 of 1993) and any Regulation applicable at the time of starting of construction. The Act requires the designation of a Health and Safety representative when more than 20 employees are employed.</li> </ul>	Contractor, HSE Officer	Apply Act	Continuous	Project manager. HSE Officer	Monthly	Check number of employees on site Safety File records
<ul style="list-style-type: none"> <li>A person trained and accredited to administer first aid must be present on site and a first aid kit must be available at the office.</li> </ul>	Contractor	Appoint trained safety officer. Supply first aid kit	Daily	Project manager	Monthly	Visual inspection Safety file records
<ul style="list-style-type: none"> <li>All personnel must be informed of emergency procedures and contact numbers must be displayed prominently.</li> </ul>	Contractor	Training talks Display emergency numbers.	Weekly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>Personal Protective Equipment (PPE) and safety gear must be provided to all site personnel (hard hats, safety boots, masks etc.).</li> </ul>	Contractor	Supply PPE	When required	Project manager	Monthly	Check: workers must use PPE
<b>Fires caused by the negligence of construction workers</b>						
<ul style="list-style-type: none"> <li>The development must comply with the requirements of the National Veld and Forest Fire Act, 1998 (Chapter 2: Fire Protection Associations and Chapter 4: Duty to Prepare and maintain firebreaks).</li> <li>An emergency plan must be in place so that any fire can be combatted in the most efficient manner. An emergency response plan that is aligned with the local Fire Department must be in place.</li> </ul>	Contractor	Ensure compliance with Act. Training on Emergency plan	At onset of construction phase Monthly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>No solid waste or vegetation may be burned on the premises or surrounding areas. No fires will be allowed outside designated areas (construction camp).</li> </ul>	Contractor	Instruction to employees	Weekly	Project manager ECO/ <u>ESCO</u>	Monthly	Incident log sheet

**SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - CONSTRUCTION PHASE**

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>All employees must be properly trained in the use of firefighting equipment and the emergency procedures in case of a fire.</li> </ul>	Contractor	Training sessions	Monthly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>Firefighting equipment must be available and must be checked regularly to ensure it is in working order and easily accessible.</li> </ul>	Contractor	Supply & check firefighting equipment	Weekly	Project manager Contractor	Monthly	Inspection log sheet
<b>Construction activities - socio-economic impact- Long and short-term Employment of workers</b>						
<ul style="list-style-type: none"> <li>Adherence to the Local and District Municipality’s guidelines, principles and policies is imperative.</li> </ul>	Contractor	Ensure adherence to policies. Implement standards	Daily during construction phase	Project Manager	Monthly	Follow up during site meetings
<ul style="list-style-type: none"> <li>Where reasonably practicable, during the construction and operational phases, jobs must be created for unemployed local people and skills must be transferred to them. Where viable, the work must be executed in a labour intensive manner to create as many jobs possible.</li> </ul>	Contractor	Appoint local people	Construction phase	Project manager	Monthly	Staff records
<b>Security Issues- Unauthorized entrance to construction areas and construction workers staying overnight at construction site</b>						
<ul style="list-style-type: none"> <li>All personnel must be informed of emergency procedures and emergency contact numbers must be displayed prominently.</li> <li>Proper access control (I.D. cards) should be enforced at entrance gate to ensure that no unauthorised persons enter the site. Security personnel should be appointed to enforce strict access control.</li> </ul>	Contractor	Training sessions on security issues-induction	Start of construction	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>No staff will be allowed to overnight on the site. Transportation must be arranged for construction workers to ensure that workers have daily transportation available to and from the site.</li> </ul>	Contractor	Arrange transport for the workers	Start of construction phase	Project manager	Monthly	Transport records

## SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - CONSTRUCTION PHASE

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <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>Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at contractor's expense.</li> <li>Maximum use of existing servitudes and roads must be made to minimize further disturbance with the development of new roads.</li> <li>Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas.</li> <li>Access roads must only be developed on pre-planned and approved roads.</li> </ul>	Contractor, Project Manager, ECO ESCO	Security checkpoints, delineation of 'No-Go' areas	Construction phase	Contractor, Project Manager, ECO ESCO	Continuous	Site access security records
<ul style="list-style-type: none"> <li>A boundary fence can be constructed around the site, which will act as a security barrier. A temporary fence should be erected around the construction camp and storage area.</li> </ul>	Contractor	Construct fences	Start of construction phase	Project manager	Monthly	Visual checks
<ul style="list-style-type: none"> <li>Security lights and infra-red video surveillance will be installed at the construction camp and storage area in such a manner that it does not become a nuisance to the surrounding properties.</li> <li>Security lights should shine directly down and directed towards the site away from the surrounding properties.</li> </ul>	Contractor	Install security lighting and video surveillance system	Start of construction phase	Project manager ECO/ ESCO	Monthly	Visual checks

**SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - CONSTRUCTION PHASE**

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>• A video-surveillance system using infrared or microwave video cameras, which do not need a switched on lighting system, is recommended.</li> <li>• Adherence to the Visual Impact Assessment mitigation measures.</li> </ul>						



**TRAFFIC IMPACT MANAGEMENT - CONSTRUCTION PHASE**

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Construction vehicles and increase in traffic</b>						
<ul style="list-style-type: none"> <li>All road safety regulations must be adhered to – on and off-site.</li> <li>Vehicles should be roadworthy.</li> <li>Speed limit of <u>30km/h</u> to be adhered at all times.</li> <li>Dust suppression to be done to avoid visibility problems.</li> <li>Provide a dedicated loading and off-loading area on site as part of the Proposed Development and ensure that contractors make use of the dedicated area.</li> </ul>	Contractor	Visual checks	When required	Site Manager	When required	Incident log sheet
<b>Road Safety</b>						
<ul style="list-style-type: none"> <li>Road safety training to be part of general training.</li> <li>The below are recommendations which can be implemented, but must be confirmed by the engineer and contractor:                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Dedicated 60 metres right-turn and left turn lane on the western and eastern approaches of the district access road to the Virginia Solar Parks (this road is named the Virginia Road in the Traffic Report).</li> <li><input type="checkbox"/> Left turn taper on the eastern and western approaches of Virginia Road.</li> <li><input type="checkbox"/> 60 meters acceleration lanes along Virginia Road towards the east and west.</li> </ul> </li> <li>Provide relevant road traffic signs and road markings at site access.</li> <li>Provide reflective road studs as part of the proposed intersection to improve visibility of the intersection geometry when it is dark. And redo faded markings on the road.</li> <li>A dedicated loading and off-loading area on-site should be established where workers can safely be loaded and off-loaded by public transport or arranged transport.</li> </ul>	Contractor, Roads Authority	Construction of mentioned changes and aspects	Prior to construction of the solar park.	Contractor, Site Manager	Prior to and during construction of solar park.	Incident log sheet

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| <ul style="list-style-type: none"><li>• 'Dust suppression techniques must be applied to the proposed access road to manage dust on site to avoid road visibility issues caused by dust.</li><li>• Obtain approval , should it be required, for the position and geometric layout for the proposed access bellmouth intersection from and to Virginia Road. This approval should be obtained from the Free State Department of Police, Roads and Transport as part of the detailed design phase</li></ul> |  |  |  |  |  |  |
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SOCIAL IMPACT MANAGEMENT - CONSTRUCTION PHASE						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Creation of employment and business opportunities, and opportunity for skills development and on-site training.</b>						
<ul style="list-style-type: none"> <li>Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.</li> <li>Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.</li> <li>Where feasible, appoint local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.</li> <li>Before the construction phase commences the proponent should meet with representatives from the Matjhabeng Local Municipality (MLM) to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.</li> <li>Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.</li> <li>The recruitment &amp; selection process should seek to promote gender equality and the employment of women wherever possible.</li> </ul>	Project Manager, Contractor	Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO/ESCO	Pre-construction and during construction	Signed agreements and training records
<b>Business</b>						
<ul style="list-style-type: none"> <li>The proponent should liaise with the MLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.)-These companies should be notified of constructed related to the tender process and invited to bid for project-related work.</li> <li>Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.</li> <li>The MLM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.</li> </ul>	Project Manager, Contractor	Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO/ESCO	Pre-construction and during construction	Signed agreements and training records

**SOCIAL IMPACT MANAGEMENT - CONSTRUCTION PHASE**

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Impacts associated with the presence of construction workers on local communities</b>						
<ul style="list-style-type: none"> <li>• Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.</li> <li>• Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.</li> <li>• The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.</li> <li>• Where possible, the proponent should make it a requirement for contractors to implement a ‘locals first’ policy for construction jobs, specifically for semi and low-skilled job categories.</li> <li>• The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP.</li> <li>• The proponent and the contractor must implement applicable awareness programmes for all construction workers at the outset of the construction phase for communicable diseases identified as significant in the health risk assessment. The programme should form part of the CHSSP.</li> <li>• The contractor should provide transport for workers to and from the site daily. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.</li> <li>• The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.</li> <li>• No construction workers, except for security personnel, should be permitted to stay over-night on the site.</li> </ul>	Project Manager, Contractor	Stakeholder engagement, security and safety Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO/ ESCO	Pre-construction and during construction	Signed agreements and training records
<b>Impacts related to the potential influx of job-seekers</b>						

## SOCIAL IMPACT MANAGEMENT - CONSTRUCTION PHASE

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.</li> <li>Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.</li> <li>The proponent, in consultation with the MLM, should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area.</li> <li>The proponent should implement a “locals first” policy where reasonably practicable, specifically with regard to unskilled and low skilled opportunities.</li> <li>The proponent should implement a policy that no employment will be available at the gate.</li> </ul>	Project Manager, Contractor	Stakeholder engagement, security and safety Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO/ ESCO	Pre-construction and during construction	Signed agreements, stakeholder engagement registers and documents
<b>Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site</b>						
<ul style="list-style-type: none"> <li>Any damages incurred as a result of construction activity or construction workers will be addressed as a claim submitted through the grievance procedure.</li> <li>Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.</li> <li>The Environmental Management Plan Programme (EMPr) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.</li> <li>Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.</li> <li>Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.</li> <li>It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay overnight on the site.</li> </ul>	Project Manager, Contractor	Farmer engagement, live stock management , Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO/ ESCO	Pre-construction and during construction	Signed agreements and records, live stock management records

SOCIAL IMPACT MANAGEMENT - CONSTRUCTION PHASE						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Increased risk of grass fires associated with construction related activities</b>						
<ul style="list-style-type: none"> <li>Contractor should ensure that open fires on the site for cooking or heating are not allowed except where and if allowed in designated areas.</li> <li>Smoking on site should be confined to designated areas.</li> <li>Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months.</li> <li>Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.</li> <li>Contractor should provide fire-fighting training to selected construction staff.</li> <li>No construction staff, with the exception of security staff, to be accommodated on site overnight.</li> <li>As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, any damages incurred as a result of construction activity or construction workers will be addressed as a claim submitted through the grievance procedure.</li> </ul>	Contractor	Farmer engagement, fire department engagement, management , Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO/ ESCO	Pre-construction and during construction	Signed agreements and records, fire management plan
<b>Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles</b>						
<ul style="list-style-type: none"> <li>The movement of construction vehicles on the site should be confined to agreed access road/s.</li> <li>Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.</li> <li>The movement of heavy vehicles associated with the construction phase should be timed, where reasonably practicable, to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher.</li> <li>Dust suppression measures should be implemented, such as</li> </ul>	Project Manager, Contractor	Site control signs, establish a grievance mechanism form, dust management plan	Pre-construction, during construction, operation	Project Manager, Contractor, ECO/ ESCO	Pre-construction, during construction, operation	Site control signs, establish a grievance mechanism form, dust management plan

**SOCIAL IMPACT MANAGEMENT - CONSTRUCTION PHASE**

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. <ul style="list-style-type: none"><li>All vehicles must be road worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.</li></ul>						

## OPERATIONAL PHASE

### AIR QUALITY – OPERATIONAL PHASE

Impact Management outcome: Prevent/minimise negative impacts on safety of employees

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

#### Movement of vehicles and construction equipment-fumes/smoke

<ul style="list-style-type: none"> <li>Vehicles and construction equipment must be well serviced so that it does not produce excessive smoke.</li> <li>The construction machinery must be maintained properly.</li> </ul>	Site Manager	Regular services	According to Maintenance schedule	Project manager ECO/ <u>ESCO</u>	According to service plan	Service records
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#### Movement of vehicles and construction equipment-Dust

<ul style="list-style-type: none"> <li>Main roads should be sprayed with water, should water not be available and if other dust mitigation measures have failed, during the dry months a product like Ecobond Can be utilized. It should be an inert product with no pollution risk.</li> <li>Internal roads must be maintained during operational phase.</li> <li>During the operational phase, where reasonably practicable, vehicles must not be permitted to deviate from designated access roads, to prevent soil compaction and increased risk of sediment availability which may lead to smothering and/or erosion of freshwater ecosystems; The ESCO/ECO may grant the movement of vehicles off of the designated roads.</li> <li>During the operational phase, inspections of structures following severe storms must be conducted and required maintenance activities must be</li> </ul>	Site Manager	Spray with water truck	During lifetime of project	Site Manager	Daily	Visual check
<ul style="list-style-type: none"> <li>Speed limit should be enforced on roads (preferably 30km/h).</li> </ul>	Site Manager	Road signs	Project lifetime	Site Manager	Weekly	Visual check

### NOISE - OPERATIONAL PHASE

Impact Management outcome: Prevent/minimise negative impacts on safety of employees

#### Movement and operation of vehicles



<ul style="list-style-type: none"> <li>On site personnel must comply with all noise regulations.</li> <li>On site personnel must comply with speed restriction of 30 km/h within the site boundaries to reduce the generation of noise.</li> <li>All vehicles must be serviced regularly to limit excessive noise.</li> </ul>	Site Manager	Regular services	According to Maintenance schedule	Site Manager	According to service plan	Service records
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**OPERATIONAL PHASE**

**VISUAL IMPACT - OPERATIONAL PHASE**

Impact Management outcome: Prevent/minimise negative impacts on safety of employees

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Visual impact.**

<ul style="list-style-type: none"> <li>All lights must shine directly down, directed towards PV plant.</li> <li>Adherence to the Visual Impact Assessment mitigation measures.</li> <li>Soft lighting and only where needed is permitted.</li> <li>Use lighting that relies on infrared sensors to switch on the lights.</li> <li>Operational light recommendations: <ul style="list-style-type: none"> <li>Refrain from causing 'light spillage' beyond the by installing light fixtures with directional illumination.</li> <li>Keep lighting to a minimum by installing low-level bollard type lights instead of post top lights along walkways between buildings.</li> <li>Where possible avoid high flood lights, and instead use lower locally lit installations.</li> <li>In general, lighting should be carefully directed and only be used where absolutely necessary.</li> <li>Should operation activities extend during night-time, adhere to the same recommendations as for the construction camp.</li> </ul> </li> <li>Keep travelling speeds along unpaved roads within the site as low as possible in order to avoid creating dust clouds.</li> <li>Where possible use earthy tones to greys with a toned-down hue, instead of whites and creams, as such combinations are recessive to the eye and tend to be slightly less noticed. Do not keep to a uniform colour but break up the components with slightly different colour tones.</li> <li>Effective light management needs to be incorporated into the</li> </ul>	Site Manager	Visual Check during the night	Life of the project	Site Manager	Daily	Management reports
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<p>design of the lighting to ensure that the visual influence is limited to the project, without jeopardising project operational safety and security (See lighting mitigations by The New England Light Pollution Advisory Group (NELPAG) and Sky Publishing Corp in 14.2).</p> <ul style="list-style-type: none"> <li>Utilisation of specific frequency LED lighting with a green hue on perimeter security fencing.</li> <li>Directional lighting on the more exposed areas of operation, where point light source is an issue.</li> <li>No use of overhead lighting and, if possible, locate the light source closer to the operation.</li> <li>If possible, the existing overhead lighting method utilised at the project should be phased out and replaced with an alternative lighting using closer to source, directed LED technology.</li> </ul> <p>Colour</p> <p>Where possible use earthy tones to greys with a toned-down hue, instead of whites and creams, as such combinations are recessive to the eye and tend to be slightly less noticed. Do not keep to a uniform colour but break up the components with slightly different colour tones.</p>						
<ul style="list-style-type: none"> <li>No waste may be burned on site.</li> </ul>	Site Manager	Visual check	Daily	Site Manager	Daily	Management reports

ECOLOGY - OPERATIONAL PHASE						
Impact Management outcome: Minimise and control impact to the natural ecology						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Spreading and propagation of Alien Invasive Species						
<ul style="list-style-type: none"> <li>The site manager should be assisted by an ecologist to be able to identify AIS, on site.</li> <li>If detected early, the entire population must be eradicated.</li> <li>Implement Control Methods as indicated in Table 1 of the AIS Management Plan.</li> </ul>	Site Manager	Walk through site. Early detection of AIS. Mechanical, Chemical or Biological Control	Continues during operational phase, but important during the rainy season	Site Manager	Bi-annually (After the first rainfall and near the end of the rainfall season)	Visual inspection – Site walk-through
ECOLOGY - OPERATIONAL PHASE						
Impact Management outcome: Minimise and control impact to the natural ecology						

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Revegetation and Habitat Rehabilitation</b>						
<ul style="list-style-type: none"> <li>Identify and Protect Environmentally Sensitive Areas.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Consult Re-vegetation and Rehabilitation Plan - liaise with Ecologist	Throughout the project lifetime	Site Manager	Annually	Monitoring Report
<ul style="list-style-type: none"> <li>Keep Photographic Record.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Take Photographs smart phone/camera	Throughout the project lifetime	Site Manager	Annually at the same time, each year	Report – Photographic Record
<ul style="list-style-type: none"> <li>Search and Rescue Activities by keeping transplantable plant species in a temporary nursery (no exotic plant species may be planted). Please note that two provincially protected plants (<i>Boophone disticha</i> and <i>Helichrysum</i>) were found on site – where construction and operation may impact on plants designated as protected under the Free State Conservation Ordinance, an application must be submitted to the Provincial authorities to clear or translocate these plants as part of the plant rescue operation. It is imperative that where construction does NOT impact on the plants, they should be left intact and undisturbed.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Create and Maintain temporary nursery of indigenous plants	During Rehabilitation, after construction	Site Manager	Annually same time, each year	Monitoring Report
<ul style="list-style-type: none"> <li>Cleared Indigenous plant to be used in erosion prone areas and mulching in rehabilitated areas.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Brush Packing and mulching in erosion areas	During Rehabilitation, after construction	Site Manager	Annually at the same time, each year	Monitoring Report
<ul style="list-style-type: none"> <li>Revegetate or stabilize disturbed areas for erosion control and rehabilitation.</li> <li>If an annual grass species is preferred in the mix these grass <i>Dactyloctenium aegyptium</i> can be used. (<i>Eragrostis teff</i> and <i>Paspalum notatum</i> must preferably <b>not</b> be used as these are not indigenous grasses. <i>Eragrostis teff</i> is also known as an annual grass and should be avoided).</li> <li>It is advised that the contractor executing the project supply a procedure or a method statement with methods and timeframes for erosion control (pre and post construction) and monitoring afterward to ensure the necessary vegetation cover is achieved.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Re-seeding, replanting and brush packing	During Rehabilitation, after construction	Site Manager	Annually at the same time, each year	Monitoring Report

<ul style="list-style-type: none"> <li>Littering prevention by providing rubbish bins for staff at designated areas, particularly where food is consumed.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Provide bins for waste with signage.	Throughout the project lifetime	Site Manager	Monthly	Monitoring Report
<ul style="list-style-type: none"> <li>Plants kept in temporary nursery to be re-planted for re-vegetation.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Planting and seeding on sited	Immediately after topsoil reinstatement	Site Manager	Monthly until 80% vegetation cover is established	Monitoring Report
<ul style="list-style-type: none"> <li>To limit fire hazard on site the grass cover along boundary must be kept short (30cm).</li> </ul>	Site Manager	Grass cutting when vegetation cover is higher than 30cm	Throughout the project lifetime	Site Manager	Bi-annually, after rainy and before winter season	Monitoring Report
<ul style="list-style-type: none"> <li>Monitoring system to be designed based on EMPr, according to development company requirements for general maintenance and monitoring.</li> </ul>	Site Manager / Ecologist / ECO/ ESCO	Design effective and appropriate monitoring system.	Throughout the project lifetime	Site Manager	According to different aspects to be monitored	Monitoring Report

**ECOLOGY - OPERATIONAL PHASE**

Impact Management outcome: Minimise and control impact to the natural ecology

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Impact on avifauna population</b>						
<ul style="list-style-type: none"> <li>Lighting of the solar farm (for example security lights) should be kept to a minimum. Lights should be directed downwards (using low-UV type lights) to prevent night birds such as owls from becoming confused during flight and colliding with solar panels and infrastructure.</li> </ul>	Site Manager	Install effective	Throughout the project lifetime	Site Manager	Daily	Monitoring Report
<ul style="list-style-type: none"> <li>The most sensitive bird species on site is the Secretary bird <i>Sagittarius serpentarius</i>. This was identified in the report but it is strongly advised that additional measures be taken to protect this species.</li> <li>All probable and high risk perching surfaces should be fitted with bird guards and perch guards as deterrents (Hunting 2002).</li> <li>Where possible the installation of artificial bird space perches or platforms at a safe distance from energised components (Goudie 2006; Prinsen et al. 2012) is advised.</li> <li>Regular cleaning and maintenance activities should prevent defecation on the panels from becoming a problem. Eco-friendly bird deterring devices could also prevent large birds from perching on the panel structures.</li> <li>All incidents of collision with panels should be recorded as meticulously as possible using good scientific protocols. Monitoring and reporting can be guided by the Avifaunal Specialist.</li> <li>If birds are nesting on the infrastructure of the facility and cannot be tolerated, birds should be prevented from accessing nesting sites by using mesh or other manner of excluding them. Monitoring and reporting can be guided by the Avifaunal Specialist.</li> </ul>	Site Manager, Avifaunal Specialist (When required)	Construct in logical positions and protect from human activities	When applicable	Site Manager; Avifaunal Specialist	Monthly	Inspection log sheet

<ul style="list-style-type: none"><li>• If there are persistent problems with avifauna, then an avifaunal specialist should be consulted for advice on further mitigation.</li><li>• An area conducive to raptors being present will aid in the containment of snakes occurring in the area.</li><li>• As the site falls into regime 2 of the best practice guidelines (as per above) there is an additional requirement of carcass searching as well as avifaunal baseline monitoring if the best practice guidelines are to be followed. Carcass searching must be done during operation and the avifaunal baseline monitoring needs to be done for 6 months in year 1 and 6 months in year 2. Bird diverters can be placed in high sensitive areas. Monitoring and reporting can be guided by the Avifaunal Specialist.</li></ul>						
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## ECOLOGY - OPERATIONAL PHASE

Impact Management outcome: Minimise and control impact to the natural ecology

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Sanitation seepage and spillage from private wastewater treatment works</b>						
<ul style="list-style-type: none"> <li>The below recommendations are only applicable if the wastewater treatment is required:                             <ul style="list-style-type: none"> <li>A private wastewater treatment works will be designed and installed on site for the development.</li> <li>Treated effluent will be available as irrigation water.</li> <li>Water quality according to General Limits specified by DWS.</li> <li>The applicant must obtain approval in terms of the NWA for the water and sewer uses of the proposed development.</li> <li>Groundwater management plan must be implemented to protect aquifer.</li> </ul> </li> </ul>	Site Manager / Ecologist / ECO / ESCO	Install effective and appropriate WWT system.	Throughout the project lifetime	Site Manager	Bi-Annually	Monitoring Report
<b>Storm Water Management</b>						
<ul style="list-style-type: none"> <li>Regular conditional inspections of all storm water infrastructure are required. Inspection data must be recorded and accumulated for tracking purposes. Regular reporting should be a scheduled management task.</li> </ul>	Site manager	Compile inspection plan	Scheduled inspections as well as during and after rainfall events	Site manager	Monthly and ad hoc	Inspection report
<ul style="list-style-type: none"> <li>Storm Water Infrastructure should be clear from debris, waste etc.</li> </ul>	Site Manager	Visual inspection of stormwater infrastructure as well as correction of problems	During and after rain and flood events	Site Manager	During and after rain and flood events	Monitoring Report
<ul style="list-style-type: none"> <li>Waste to be safely stored and disposed of off-site.</li> </ul>	Site Manager	Storing facilities and waste removal schedule	Monthly	Site Manager	Monthly	Monitoring Report
<ul style="list-style-type: none"> <li>Site personnel to be trained as part of induction – maintenance of stormwater systems.</li> </ul>	Site Manager	Training program as part of induction	At induction	Site Manager	Monthly	Monitoring Report

**ECOLOGY - OPERATIONAL PHASE**

Impact Management outcome: Minimise and control impact to the natural ecology

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Fire Management Minimise Fire Risk on developed site</b>						
<ul style="list-style-type: none"> <li>Tall woody plants to be cut and removed.</li> <li>Grass cover to be kept short.</li> <li>No fires allowed on site (signage to be put up).</li> <li>Firebreaks to be maintained.</li> </ul>	Site Manager	Slashing and cutting of tall trees and grass (avoid the use of herbicides)	Annually	Site Manager	Annually	Monitoring and Photographic Report,
<ul style="list-style-type: none"> <li>Appointed personnel on site must attend a fire-fighting training program and be able to use fire-fighting equipment, on site.</li> </ul>	Site Manager and Health & Safety Officer	Personnel to attend relevant courses	Lifetime of the project	Site Manager and Health & Safety Officer	Annual refresher courses	Health and Safety records

**ECOLOGY - OPERATIONAL PHASE**

Impact Management outcome: Minimise and control impact to the natural ecology

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Waste Management – Reduce, Re-Use and Recycle</b>						
<ul style="list-style-type: none"> <li>A management system for waste must be implemented with the aim to reduce, re-use and recycle.</li> <li>Household waste should be stored in closed containers.</li> </ul>	Site Manager and Health & Safety Officer	Applying sound household / domestic and health practices	Lifetime of the project	Site Manager and Health & Safety Officer	Monthly	Health and Safety records



### ECOLOGY - OPERATIONAL PHASE

Impact Management outcome: Minimise and control impact to the natural ecology

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>A service provided must be appointed to collect household waste and sewage, to be taken to a licensed landfill site.</li> <li>An approved contractor must be appointed to collect fuel waste and old oil to be taken to a licensed hazardous waste landfill site.</li> </ul>						

### TRAFFIC IMPACT MANAGEMENT - OPERATIONAL PHASE

Impact Management outcome: Prevent/minimise negative impacts on safety of employees

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Road Safety</b>						
<ul style="list-style-type: none"> <li>Road safety training to be part of general training for employees.</li> <li>Speed limit (30km/h) on-site indicated on appropriate signage.</li> </ul>	Contractor	Visual checks	When required	Site Manager	When required	Incident log sheet

### SAFETY, SECURITY, AND FIRE HAZARDS - OPERATIONAL PHASE

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>An emergency plan must be in place so that any fire can be combatted in the most efficient manner. An emergency response plan aligned with the local Fire Department must be in place.</li> </ul>		Training on Emergency plan	Monthly			
<ul style="list-style-type: none"> <li>No solid waste or vegetation may be burned on the premises or surrounding areas.</li> </ul>	Contractor	Instruction to employees	Weekly	Project manager ECO / ESCO	Monthly	Incident log sheet

<ul style="list-style-type: none"> <li>All employees must be properly trained in the use of firefighting equipment and the emergency procedures in case of a fire.</li> </ul>	Contractor	Training sessions	Monthly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>Firefighting equipment must be available and must be checked regularly to ensure it is in proper working order and accessible.</li> </ul>	Contractor	Supply & check firefighting equipment	Weekly	Project manager Contractor	Monthly	Inspection log sheet
<ul style="list-style-type: none"> <li>Personal Protective Equipment (PPE) and safety gear must be provided to all site personnel: hard hats, safety boots, masks etc.</li> </ul>	Contractor	Supply PPE	When required	Project manager	Monthly	Check if workers are using PPE
<b>Security Issues- Unauthorized entrance to facility areas</b>						
<ul style="list-style-type: none"> <li>Proper access control (I.D. cards) should be enforced at the entrance gate to ensure that no unauthorised persons enter the site. Security personnel should be appointed to enforce strict access control.</li> </ul>	Contractor	Apply Act	Continuous	Project manager	Monthly	Check number of employees on site Safety File records

<b>SOCIAL IMPACT MANAGEMENT – OPERATION PHASE</b>						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Establishment of infrastructure to improve energy security and support renewable sector</b>						
<ul style="list-style-type: none"> <li>Implement a skills development and training programme aimed at maximizing the number of employment opportunities for local community members.</li> <li>Maximise opportunities for local content, procurement, and community shareholding.</li> </ul>	Project Manager, Contractor	Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO / ESCO	Pre-construction and during construction	Signed agreements and training records
<b>Creation of employment opportunities</b>						
<ul style="list-style-type: none"> <li>Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.</li> <li>Where feasible and reasonably practicable, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.</li> <li>Where reasonable and practical, before the operational phase</li> </ul>	Project Manager, Contractor	Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO / ESCO	Pre-construction and during construction	Signed agreements and training records

**SOCIAL IMPACT MANAGEMENT – OPERATION PHASE**

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

<p>commences the proponent should meet with representatives from the HM to establish the existence of a skills database for the area.</p> <ul style="list-style-type: none"> <li>The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the operational phase of the project.</li> <li>Where reasonable and practical, the recruitment selection process should seek to promote gender equality and the employment of women wherever possible.</li> </ul>						
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**Creation of business opportunities**

<ul style="list-style-type: none"> <li>The proponent should liaise with the HM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers prior to the commencement of the operational. These companies should be notified of the tender process and invited to bid for project-related work.</li> <li>Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.</li> </ul>	Project Manager, Contractor	Stakeholder engagement, security and safety Agreements and training	Pre-construction and during construction	Project Manager, Contractor, ECO / ESCO	Pre-construction and during construction	Signed agreements and training records
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**Benefits associated with the socio-economic contributions to community development**

<ul style="list-style-type: none"> <li>The proponents should liaise with the MLM to identify projects that can be supported by SED contributions.</li> <li>Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community.</li> <li>Strict financial management controls, including annual audits, should be instituted to manage the SED contributions.</li> </ul>	Project Manager, Contractor	Community and Municipal engagement	Pre-construction and during construction	Project Manager, Contractor, ECO/ ESCO	Pre-construction and during construction	Community and Municipal engagements
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**Social Visual impacts and associated impacts on sense of place**

<ul style="list-style-type: none"> <li>Implement recommendations of the VIA.</li> </ul>	Project Manager,	Visual Impact Assessment -	Pre-construction	Project Manager,	Pre-construction	Visual Impact Assessment -
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<b>SOCIAL IMPACT MANAGEMENT – OPERATION PHASE</b>						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
	Contractor, Visual Specialist	mitigation measures must be implemented	and during construction	Contractor, ECO, Visual Specialist	and during construction	mitigation measures must be implemented using the EMPr
<b>Impact on property values</b>						
<ul style="list-style-type: none"> <li>Implement recommendations of the VIA.</li> </ul>	Project Manager, Contractor, Visual Specialist	Visual Impact Assessment - mitigation measures must be implemented	Pre-construction and during construction	Project Manager, Contractor, ECO, Visual Specialist	Pre-construction and during construction	Visual Impact Assessment - mitigation measures must be implemented using the EMPr
<b>Impact on tourism</b>						
<ul style="list-style-type: none"> <li>Implement recommendations of the VIA.</li> </ul>	Project Manager, Contractor, Visual Specialist	Visual Impact Assessment - mitigation measures must be implemented	Pre-construction and during construction	Project Manager, Contractor, ECO, Visual Specialist	Pre-construction and during construction	Visual Impact Assessment - mitigation measures must be implemented using the EMPr

## DECOMMISSIONING PHASE

### AIR QUALITY – DECOMMISSIONING PHASE

Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

#### Management of HSE onsite

<ul style="list-style-type: none"> <li>The Contractor shall conform to all the stipulations of the Occupational Health and Safety act (Act 85 of 1993) and any Regulation applicable at the time of starting of decommissioning.</li> </ul>	Contract, HSE officer	Appointment of an HSE officer	All phases	Contract, HSE officer	All phases	HSE records and checklists
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#### **Movement of vehicles and construction equipment-fumes/smoke**

<ul style="list-style-type: none"> <li>Vehicles and construction equipment must be well serviced so that it does not produce excessive smoke.</li> <li>The construction machinery must be maintained properly.</li> </ul>	Contractor	Regular services	According to Maintenance schedule	Project manager ECO	Weekly	Service records
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#### **Movement of vehicles and construction equipment-Dust**

<ul style="list-style-type: none"> <li>Main roads should be gravelled or sprayed with water especially during the dry months.</li> <li>The use of a product like Ecobond is recommended as opposed to water. However, it should be an inert product with no pollution risk.</li> <li>Internal roads must be maintained on a regular basis during construction.</li> </ul>	Contractor	Spray with water truck	When need in construction	Project manager ECO	Daily	Visual check
<ul style="list-style-type: none"> <li>A speed limit should be enforced on dirt roads (preferably 30km/h).</li> </ul>	Contractor	Road signs	During construction	Project manager Contractor	Weekly	Visual check

#### **Burning of cleared vegetation and solid waste or fires for cooking and heating – smoke**

<ul style="list-style-type: none"> <li>• Solid waste may not be burnt on site. Solid waste should be kept in animal proof bins from where they will be removed to the Matjhabeng Local Municipality's landfill site on a regular basis e.g. weekly.</li> <li>• No open fires are allowed at construction sites.</li> <li>• Fires for cooking should be restricted to designated areas, extra care should be taken to ensure to prevent veld fires from occurring. Fire belts must be made around the development according to the regulations of the Veld and Forest Fire Act.</li> <li>• Cigarette butts must be disposed of in designated containers only.</li> </ul>	Contractor	Instruction to workers Visual checks Supply waste containers & remove waste weekly	During construction	Project manager ECO	Daily for fires Monthly for disposal	Visual check & disposal records
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## DECOMMISSIONING PHASE

### AIR QUALITY – DECOMMISSIONING PHASE

Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Firebreaks must be maintained to decrease risk of accidental fires.</li> </ul>						
<ul style="list-style-type: none"> <li>Waste management and recycling plan should be compiled for decommissioning phase of development. Aim of the plan should be to ensure that the construction materials/debris generated on site be reduced, reused and recycled. This plan should be compiled in consultation with the contractors and engineers.</li> </ul>	Contractor	Implement plan	Daily during Construction	Project manager ECO / ESCO	Weekly	Visual Records of disposal.

### NOISE - DECOMMISSIONING PHASE

Impact Management outcome: Minimise impact to animals and people through the control/mitigation of noise impacts

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Movement and operation of vehicles and machinery</b>						
<ul style="list-style-type: none"> <li>Contractors must comply with all noise regulations.</li> <li>Construction personnel must comply with speed restriction of 30 km per hour within site boundaries to reduce generation of noise.</li> <li>Construction vehicles are to be serviced on a regular basis to ensure they do not make excessive noise. Construction machinery must be fitted with noise mufflers and be maintained properly.</li> <li>Decommission activities should only take place between sunrise and sunset from Monday to Saturday. No decommissioning activities should be allowed to take place on Sunday, unless an agreement has been reached with surrounding property owners.</li> </ul>	Contractor	Vehicle maintenance	Continuous in construction according to schedule	Project manager Contractor	Weekly	Records and noise levels measurements
<ul style="list-style-type: none"> <li>All employees working in a noisy environment must be given the necessary ear protection gear.</li> </ul>	Contractor	Physical handout of ear plugs	Daily	Project manager ECO/ ESCO	Weekly	Check use of ear protection by

GROUND- AND SURFACE WATER POLLUTION - DECOMMISSIONING PHASE						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Sanitation seepage and spillage from temporary chemical toilets.</b>						
<ul style="list-style-type: none"> <li>Chemical sanitation facilities should be used on site and regularly (at least weekly) serviced by registered companies to ensure that no spills or leaks from toilets to groundwater or surface water take place.</li> <li>The temporary sanitation system should be regularly inspected to ensure that no spills or leaks from sanitation system to groundwater take place.</li> </ul>	Contractor	Appoint service contractor for weekly service of toilets Inspect toilets weekly	Weekly	Project manager ECO/ ESCO	Weekly	Records
<ul style="list-style-type: none"> <li>Chemical sanitation facilities should not be positioned closer than 100m from surface water resources. The ratio of one toilet for every 15 workers on site should be maintained.</li> </ul>	Contractor	Positioning of toilets	Once off at beginning of each phase of construction	Project manager ECO/ ESCO	Monthly	Visual inspection
<b>Spillage of fuel and lubricants from construction vehicles and machinery</b>						
<ul style="list-style-type: none"> <li>Construction vehicles should be serviced on a regular basis to prevent or minimize the risk of spills or leakages of fuel and oil.</li> <li>All construction vehicles should be inspected for oil and fuel leaks regularly.</li> <li>Vehicles must be parked with spill pans underneath the vehicles.</li> </ul>	Contractor	Service records, instructions/training to drivers and visual checks	Daily	Project manager ECO/ ESCO	Monthly	Visual check Records check
GROUND- AND SURFACE WATER POLLUTION - DECOMMISSIONING PHASE						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>The storage of fuel, oils and lubricants must only take place where spillages can be controlled.</li> <li>Maintenance must also be done at the temporary maintenance workshop on the site.</li> </ul>						



<ul style="list-style-type: none"> <li>When a spill incident occurs all possible measures must be taken to ensure that spilled fuel or oil do not reach any drainage line.</li> <li>Spill incidents must be reported to DFFE in terms of Section 30(5) of NEMA.</li> </ul>	Contractor	Handle the spill correctly	When spill takes place	Project manager ECO/ ESCO	Monthly	Check spill records
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**Spillage/use of fuel in temporary fuel tanks as well as construction activities (e.g., mixing of concrete, cement, paints etc.)**

<ul style="list-style-type: none"> <li>Diesel storage must be <b>less</b> than 80000 litres at construction decommissioning camps.</li> <li>A bund wall should be constructed around the fuel tank structures and the run-off diverted to a conservancy tank.</li> <li>Drip pans should be used during re-fuelling and servicing of construction vehicles. Drip pans can also be placed underneath stationary construction vehicles and equipment.</li> <li>Spilled fuel should be disposed of at the nearest approved fuel recycling collection point. Alternatively drip pans can be placed underneath temporary fuel tanks.</li> </ul>	Contractor	Supply and erect surface tanks <80 000 litres Supply drip pans	When required	Project manager	Weekly	Inspection log sheet Spot checks/photos
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<ul style="list-style-type: none"> <li>Provision must be made for refuelling 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> </ul>	Contractor	Supply drip trays and sheeting	Prior to any refuelling	Project manager ECO/ ESCO	Weekly	Photos
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<ul style="list-style-type: none"> <li>Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used.</li> </ul>	Contractor	Supply drip trays and sheeting	Prior to any refuelling	Project manager ECO/ ESCO	Weekly	Photos
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<ul style="list-style-type: none"> <li>Accidental spillages must be contained and cleaned up promptly.</li> <li>Spill kits should be on-hand to deal with spills immediately.</li> </ul>	Contractor	Have spill kits available	When spills take place	Project manager ECO/ ESCO	Monthly	Spill records
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**GROUND- AND SURFACE WATER POLLUTION - DECOMMISSIONING PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Spillages or leakages must be treated according to an applicable procedure as determined by a plan of action for the specific type of disturbance.</li> </ul>	Contractor	Have spills procedure available on site and communicate to workforce		Project manager ECO/ ESCO	Monthly	Spill records

<ul style="list-style-type: none"> <li>The temporary vehicle maintenance yard and storage area should be fenced off.</li> </ul>	Contractor	Fence off yard	Beginning of construction	Project manager	Weekly	Once off check
<ul style="list-style-type: none"> <li>Used parts like filters should be contained and disposed of at a site licensed for dumping of these waste products.</li> </ul>	Contractor	Appoint contractor for disposal of parts	Beginning of construction Disposal when needed	Project manager ECO/ ESCO	Monthly	Disposal records
<b>GROUND- AND SURFACE WATER POLLUTION - DECOMMISSIONING PHASE</b>						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Storage and disposal of waste, littering and disassembled components on site</b>						
<ul style="list-style-type: none"> <li>Solid waste generated by decommissioning teams may not be burned on site or the surrounding areas. Solid waste should be kept in animal proof bins at construction sites and be removed to the Matjhabeng Local Municipality's landfill site on a regular basis. Building rubble should be removed to the Matjhabeng Local Municipality's landfill site as the development progresses.</li> <li>All components will be disassembled. Silicon of PV modules will be recycled, as well as mounting structures (aluminium or zinc steel frames and piles), the cables (copper and/or aluminium conductor) and the connection structures.</li> <li>Non-recyclable components of inverter, transformers and electrical devices will be disposed in appropriate way, in compliance with applicable laws and international standards.</li> <li>Regular clean-up programs should be put into effect throughout the premises to limit the impact of littering caused by decommissioning activities.</li> </ul>	Contractor	Supply waste containers Dispose of waste at the correct site Clean up site regularly Supply material to recyclers	Continuously during construction Daily cleaning	Project manager ECO/ ESCO	Monthly	Check disposal records
<ul style="list-style-type: none"> <li>A comprehensive waste and recycling management plan should be compiled for the decommissioning phase. The aim of the plan should be to ensure that the decommissioned materials/debris generated on site be reduced, reused and recycled. This plan should be compiled in consultation with the contractors and engineers.</li> </ul>	Contractor	Get waste plan from Project Manager	Start of construction	Project manager ECO/ ESCO	Once off	Waste and recycling management plan records

<ul style="list-style-type: none"> <li>Ensure strict compliance that no foreign matter is deposited in trenches. Any foreign matter must be removed immediately.</li> </ul>	Contractor	Visual inspection before closure	Continuous	Project manager ECO/ ESCO	Weekly	Spot checks
<b>Storm water across cleared areas</b>						
<b>GROUND- AND SURFACE WATER POLLUTION - DECOMMISSIONING PHASE</b>						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Cleared areas should be rehabilitated by reintroducing a grass layer and indigenous plant species as soon as possible to limit the occurrence of erosion.</li> </ul>	Contractor	Vegetate area with grass layer	As soon as possible during construction	Project manager ECO/ ESCO	Monthly	Checking Photo records
<ul style="list-style-type: none"> <li>Monitor and repair any signs of erosion after heavy downpours.</li> </ul>	Contractor	Visual checks	After rainstorms	Project manager ECO/ ESCO	Monthly	Visual checks

<b>WATER SUPPLY MANAGEMENT - DECOMMISSIONING PHASE</b>						
Impact Management outcome: Implement responsible water usage						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Decommissioning activities and dust abatement along internal roads and at decommissioning sites</b>						
<ul style="list-style-type: none"> <li>Water should be used sparingly and it should be ensured that no water is wasted.</li> <li>Roads should be treated with dust abatement chemicals to reduce the use of water.</li> <li>Washing of construction vehicles should be limited to once or twice a month and must be done with high pressure sprayers to reduce water consumption.</li> <li>Water tanks should be regularly inspected to ensure that no leaks occur.</li> <li>Decommissioning workers must be educated on the importance and ways to use water sparingly.</li> </ul>	Contractor	Keep water use records.  Train workers in water saving	Continuous	Project manager <u>ECO/ ESCO</u>	Monthly	Visual checks
<b>SOIL POLLUTION AND DEGRADATION (Geology, Soils &amp; Wetlands) - DECOMMISSIONING PHASE</b>						

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Operation of construction vehicles and machinery &amp; Fuel storage (leakages)</b>						
<ul style="list-style-type: none"> <li>Construction vehicles must be well serviced and maintained regularly according to manufacturer's specifications to prevent oil and fuel leaks. Vehicle maintenance will not be done on site except in emergency situations in which case mobile.</li> <li>All construction vehicles should be inspected for oil and fuel leaks regularly and frequently.</li> <li>The temporary vehicle maintenance yard and storage area should be fenced off.</li> </ul>	Contractor	Maintenance of vehicles	According to schedule	Project manager ECO/ ESCO	Monthly	Records
<ul style="list-style-type: none"> <li>Used parts like filters should be contained and disposed of at a site licensed for dumping of these waste products.</li> </ul>	Contractor	Disposal at correct site	When maintenance is done	Project manager ECO/ ESCO	Monthly at site meetings	Records
<ul style="list-style-type: none"> <li>Machinery must be serviced and re-fuelled at existing facilities as far as is possible.</li> </ul>	Contractor	Instructions to drivers	Continuously	Project manager ECO/ ESCO	Monthly	Records
<ul style="list-style-type: none"> <li>Prevent spillage of fuel or oil onto the soil, and put in place measures to ensure that any accidental spillages can be contained and cleaned up promptly.</li> <li>Any spills must be treated and removed by a qualified agent/company.</li> </ul>	Contractor	Clean-up	When applicable	Project manager ECO/ ESCO	Monthly	Records
<ul style="list-style-type: none"> <li>Diesel storage must be <b>less</b> than 80000 litres at decommissioning camps.</li> <li>A bund wall should be constructed around the fuel tank structures and the run-off diverted to a conservancy tank.</li> <li>The spilled fuel should be disposed of at the nearest approved fuel recycling collection point. Alternatively drip pans can be placed underneath temporary fuel tanks.</li> <li>Drip pans should be used when refuelling and servicing construction vehicles or equipment. Drip pans can also be placed</li> </ul>	Contractor	Supply and erect surface tanks <80 000 litre Procedures for handling of spills Supply drip pans	When required	Project manager ECO/ ESCO	Weekly	Inspection log sheet Spot checks/photos Disposal records

**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - DECOMMISSIONING PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
underneath stationary construction vehicles and equipment. Used or spilled oil should be taken to the nearest oil refiner or recycling plant for recycling.						
Spill kits should be on-hand to deal with spills immediately.	Contractor	Keep spill kits on site	When required	Project manager ECO/ ESCO	Weekly	Inspection log sheet Spot checks/photos

**SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - DECOMMISSIONING PHASE**

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<b>Spillage from temporary chemical toilets</b>						
<ul style="list-style-type: none"> <li>Chemical sanitation facilities should be used on site and regularly serviced by registered companies to ensure that no spills or leaks from toilets to groundwater or surface water take place. The ratio of one toilet for every 15 workers on site should be maintained.</li> <li>The temporary sanitation system in the construction site should be regularly inspected to ensure that no spills or leaks from sanitation system to groundwater take place.</li> </ul>	Contractor	Appoint service contractor	Weekly	Project manager	Monthly	Spot checks

**Increase in storm water run-of - soil erosion**

<ul style="list-style-type: none"> <li>Cleared areas should be re-vegetated allowing a grass layer to re-establish as soon as possible to limit erosion.</li> <li>Minimize the amount of land disturbance.</li> <li>Develop and implement stringent erosion and dust control practices.</li> <li>Slopes produced by removing of soil must be kept to a minimum to reduce the chances of erosion damage to the area.</li> </ul>	Contractor	Construction according to plans Follow revegetation plans	During construction phase Continuous rehabilitation	Project manager ECO/ ESCO	Weekly	Check construction against plan
<ul style="list-style-type: none"> <li>Monitor and repair any signs of erosion after heavy downpours.</li> </ul>	Contractor	Repair erosion	After rainstorms	Project manager ECO/ ESCO	Monthly	Visual checks

### SOIL POLLUTION AND DEGRADATION (Geology, Soils & Wetlands) - DECOMMISSIONING PHASE

Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of soil pollution and degradation

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Solid waste accumulation on/in soil. Storage and disposal of building rubble, waste and littering on site

<ul style="list-style-type: none"> <li>Solid waste must be kept in adequate animal and weatherproof waste bins at the decommissioning camp and at the construction sites. Building rubble and waste should be removed on a regular basis to the Matjhabeng Local Municipality's landfill site.</li> <li>A comprehensive waste management plan should be compiled for the decommissioning phase of the development. The aim of the plan will be to ensure that the decommissioned materials/debris generated on site be reduced, reused and recycled.</li> <li>Regular clean-up programs to be put into effect on the premises to limit impact of littering caused by construction activities.</li> </ul>	Contractor	Continuous implementation of actions according to waste management plan	Weekly removal	Project manager ECO/ ESCO	Monthly	Records of waste disposal to be kept.
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### ECOLOGY - DECOMMISSIONING PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during decommissioning.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Control of animals on site. Killing, poisoning, or hunting of animals

<ul style="list-style-type: none"> <li>No animals may be killed, captured or hunted or fed on site by construction workers. No poison should be used to control any animals without the input of an ecologist/zoologist.</li> <li>Limit pesticide use to no-persistent, immobile pesticides and apply in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications since the wrong use thereof can have disastrous consequences for the raptors occurring in the area.</li> </ul>	Contractor	Fine for transgressors  Apply according to label  Training of work force	When applicable	Project manager ECO/ ESCO	Weekly	Incident logs  Check pesticides log  Training records
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### ECOLOGY - DECOMMISSIONING PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during decommissioning.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Instruct employees, contractors, and site visitors to avoid harassment and disturbance of wildlife.</li> </ul>						
<ul style="list-style-type: none"> <li>A register must be kept of all relevant details of herbicide and pesticide usage.</li> </ul>	Contractor	Draw up register	When applicable	Project manager ECO/ ESCO	Monthly	Inspection log sheet

### Occurrence of veld fires on site

<ul style="list-style-type: none"> <li>Educate construction workers regarding risks and correct disposal of cigarettes.</li> <li>Fires should only be allowed in designated places within the decommissioning camp and extra care should be taken to prevent veld fires from occurring.</li> </ul>	Contractor	Training & keep site clean of cleared vegetation Site instruction	Weekly	Project manager ECO/ ESCO	Monthly	Training records & visual inspection
<ul style="list-style-type: none"> <li>Maintain proper firebreaks around entire development footprint. Firebreaks should comply with the National Veld and Forest Fire Act, 1998 (Chapter 4: Duty to Prepare and maintain firebreaks).</li> </ul>	Contractor	Make fire breaks	Once-off Maintain as necessary	Project manager ECO/ ESCO	Monthly	Visual inspection

### Increase in traffic on the site

<ul style="list-style-type: none"> <li>The speed of construction vehicles on internal roads should be kept as low as possible (30 km/h) to reduce incidence of road kill.</li> <li>Decommissioning activities must remain within defined construction areas and the road servitudes.</li> </ul>	Contractor	Speed checks to fines transgressors	Decommissioning phase	Project manager ECO/ ESCO	Monthly	Visual inspection
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### Littering (e.g. cans & plastics) along access road & at construction sites

<ul style="list-style-type: none"> <li>Solid waste must be kept in adequate animal proof waste bins at the construction camp and construction sites.</li> <li>Building rubble and various wastes should be removed to Matjhabeng local Municipality landfill site. A recycling program must be designed to minimise production of solid waste (e.g. organic waste into compost, the rest will be sorted and taken to various recycling stations in the Matjhabeng Local Municipality).</li> </ul>	Contractor	Removal of waste to licensed disposal site  Regular site clean-	During decommissioning phase	Project Manager ECO/ ESCO	Daily Weekly	Disposal records
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### ECOLOGY - DECOMMISSIONING PHASE

Impact Management outcome: Minimise and control impact to the ecological aspects during decommissioning.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>Regular clean-up programs should be put into effect along the access road and throughout the premises to limit the impact of littering caused by decommissioning activities.</li> </ul>		up programs				

### Rehabilitation of site

<ul style="list-style-type: none"> <li>Open areas, where infrastructure was removed must be re-vegetated allowing a grass layer to re-establish as soonest.</li> <li>Area should be safe for workers and staff and after rehabilitation, it must provide a safe environment for both animals and people.</li> <li>Revegetate / re-seed or stabilize disturbed areas for erosion control and rehabilitation.</li> <li>Follow-up actions to check if re-vegetation was successful.</li> </ul>	ECO	According to Rehabilitation plan included in EMPr	Decommissioning phase	ECO/ ESCO	Once off after decommissioning is concluded	Monitoring report
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### VISUAL DISTURBANCE - DECOMMISSIONING PHASE

Impact Management outcome: Prevent unnecessary negative visual impact by ensuring that visual impacts are mitigated.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Construction activities and temporary structures-visual impact.



<ul style="list-style-type: none"> <li>Security lights at the temporary maintenance yard and storage area should shine directly down and directed towards the site.</li> <li>Adherence to the Visual Impact Assessment mitigation measures.</li> <li>Ensure that dust suppressing techniques are in place at all times. These could include the regular wetting of the soil or the application of dust suppressing agents.</li> <li>Rehabilitate and re-vegetate exposed soil areas, with indigenous planting, as soon as possible. A vegetation specialist should be consulted in this regard.</li> <li>Minimise the clearance of existing vegetation, the need for re-vegetating, and exposed surfaces. Implement correct and effective storm-water management measures that would reduce the potential for erosion.</li> <li>It is assumed that decommissioning activities would be restricted to daylight hours with no lighting requirements. However, if lighting is needed, refer to the mitigation measures proposed above.</li> </ul>	Contractor	Walk over monitoring	Monthly	Project manager ECO/ ESCO	Monthly	Visual inspection
<ul style="list-style-type: none"> <li>No waste may be burned on site.</li> </ul>	Contractor	Instruction to personnel	Daily	Project manager ECO/ ESCO	Monthly	Visual inspection

### HERITAGE RESOURCES - DECOMMISSIONING PHASE

Impact Management outcome: Prevent/minimise negative impacts on heritage resources

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Earthworks and buildings & structures removing

<ul style="list-style-type: none"> <li>Halt decommissioning and notify the archaeologist or SAHRA whenever anything of potential heritage value is discovered.</li> </ul>	Contractor	Halt construction Call Archaeologist	When required	Project manager ECO/ ESCO	When required	Incident log sheet
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### SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - DECOMMISSIONING PHASE

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Decommissioning activities - safety of employees

<ul style="list-style-type: none"> <li>The Contractor shall conform to all the stipulations of the Occupational Health and Safety act (Act 85 of 1993) and any Regulation applicable at the time of starting of decommissioning.</li> <li>The Act requires the designation of a Health and Safety representative when more than 20 employees are employed.</li> </ul>	Contractor	Apply Act	Continuous	Project manager	Monthly	Check number of employees on site Safety File records
<ul style="list-style-type: none"> <li>A person trained and accredited to administer first aid must be present on site and a first aid kit must be available at the site office.</li> </ul>	Contractor	Appoint trained safety representative Supply first aid kit	Daily	Project manager	Monthly	Visual inspection Safety file records
<ul style="list-style-type: none"> <li>All personnel must be informed of emergency procedures and contact numbers must be displayed prominently.</li> </ul>	Contractor	Training talks Display emergency numbers.	Weekly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>Personal Protective Equipment (PPE) and safety gear must be provided to all site personnel: hard hats, safety boots, masks etc.</li> </ul>	Contractor	Supply PPE	When required	Project manager	Monthly	Check if workers are using PPE

### SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - DECOMMISSIONING PHASE

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

### Fires caused by the negligence of decommissioning workers

<ul style="list-style-type: none"> <li>Development must comply with the requirements of the National Veld and Forest Fire Act, 1998 (Chapter 2 and Chapter 4).</li> <li>An emergency plan must be in place so that any fire can be combatted in the most efficient manner. An emergency response plan aligned with the local Fire Department must be in place.</li> </ul>	Contractor	Ensure compliance with Act. Training on Emergency plan	At onset of construction phase Monthly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>No solid waste or vegetation may be burned on the premises or surrounding areas. No fires will be allowed outside designated areas (construction camp).</li> </ul>	Contractor	Instruction to employees	Weekly	Project manager ECO/ ESCO	Monthly	Incident log sheet
<ul style="list-style-type: none"> <li>All employees must be properly trained in the use of firefighting equipment and the emergency procedures in case of a fire.</li> </ul>	Contractor	Training sessions	Monthly	Project manager	Monthly	Training records
<ul style="list-style-type: none"> <li>Firefighting equipment must be available and must be checked regularly to ensure it is in proper working order and accessible.</li> </ul>	Contractor	Supply & check firefighting equipment	Weekly	Project manager Contractor	Monthly	Inspection log sheet

<b>Decommissioning activities - socio-economic impact- Employment of workers</b>						
<ul style="list-style-type: none"> <li>Adherence to the Local and District Municipality's guidelines, principles and policies is imperative.</li> </ul>	Contractor	Ensure adherence to policies. Implement work procedures and standards	Daily during construction phase	Project Manager	Monthly	Follow up during site meetings
<ul style="list-style-type: none"> <li>During the decommissioning phase, if and where possible, jobs must be created for unemployed local people and skills must be transferred to them. Where viable, the work must be executed in a labour intensive manner to create as many jobs possible.</li> </ul>	Contractor	Appoint local people	Construction phase	Project manager	Monthly	Staff records
<b>Security Issues- Unauthorized entrance to construction areas and construction workers staying overnight at construction site</b>						
<ul style="list-style-type: none"> <li>All personnel must be informed of emergency procedures and emergency contact numbers must be displayed prominently.</li> </ul>	Contractor	Training sessions on security	Start of construction	Project manager	Monthly	Training records
<b>SAFETY, SECURITY, SOCIO-ECONOMICS, AND FIRE HAZARDS - DECOMMISSIONING PHASE</b>						
Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
<ul style="list-style-type: none"> <li>No staff / personnel will be allowed to overnight on the site.</li> <li>Proper access control (I.D. cards) should be enforced at the entrance gate to ensure that no unauthorised persons enter the site. Security personnel should be appointed to enforce strict access control.</li> </ul>		issues-induction				
<ul style="list-style-type: none"> <li>No staff / personnel will be allowed to overnight on the site. Transportation must be pre-arranged for the decommissioning workers to ensure that the workers from the surrounding local communities have daily transportation available to and from the site.</li> </ul>	Contractor	Arrange transport for the workers	Start of construction phase	Project manager	Monthly	Transport records
<ul style="list-style-type: none"> <li>A temporary fence should be erected around the decommissioning camp and storage area.</li> </ul>	Contractor	Construct fences	Start of construction phase	Project manager	Monthly	Visual checks

<ul style="list-style-type: none"> <li>The security lights at the temporary maintenance yard and storage area should shine directly down and directed towards the site away from the surrounding properties.</li> <li>Adherence to the Visual Impact Assessment mitigation measures.</li> </ul>	Contractor	Install security lighting and video surveillance system	Start of construction phase	Project manager ECO/ <u>ESCO</u>	Monthly	Visual checks
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**SOCIAL IMPACT - DECOMMISSIONING PHASE**

Impact Management outcome: Ensuring a safe/secure construction environment, enhanced socio-economic development and prevention of fires.

Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance

**Management of social impacts**

<ul style="list-style-type: none"> <li>All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning</li> </ul>	Project Manager, Contractor, Visual Specialist, ECO	Ensure compliance with the visual requirements of the EMPr	Decommissioning	Project Manager, Contractor, Visual Specialist, ECO/ ESCO	Decommissioning	Ensure compliance with the visual requirements of the EMPr
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