K2022578692 SOUTH AFRICA (PTY) LTD

Proposed Development of the Solar Photovoltaic Facility, Rhino PV on remainder of farm Rhenosterkop 155 and Sunnyside PV on farm 400, Beaufort West in the Western Cape Province

Final Environmental Management Programme

Issue Date:	27 March 2024
Revision no.:	2.0
Project No.	18726
DFFE Ref No.:	14/12/16/3/3/1/2921

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Revision Number:	2.0
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Signature:	
Client:	K2022578692 South Africa (Pty) Ltd

Confidentiality Statement

K2022578692 SOUTH AFRICA (PTY) LTD

SOLAR PHOTOVOLTAIC FACILITY, "RHINO" ON REMAINDER OF FARM RHENOSTERKOP 155 AND "SUNNYSIDE" ON FARM 400,

FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

K2022578692 SOUTH AFRICA (PTY) LTD

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FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

1. INTRODUCTION

K2022578692 South Africa (Pty) Ltd is proposing to develop a solar photovoltaic (PV) facility and associated infrastructure on the Remainder of Farm Rhenosterkop 155 ("Rhino") and Farm 400 ("Sunnyside"), situated approximately 27 to 30 kilometres (km) to the east and north-east of Beaufort West in the Western Cape Province (refer to **Figure 1**) (**DFFE Reference Number: 14/12/16/3/3/1/2921).** The sites fall within the Beaufort West Local Municipality (BWLM) and Central Karoo District Municipality (CKDM).

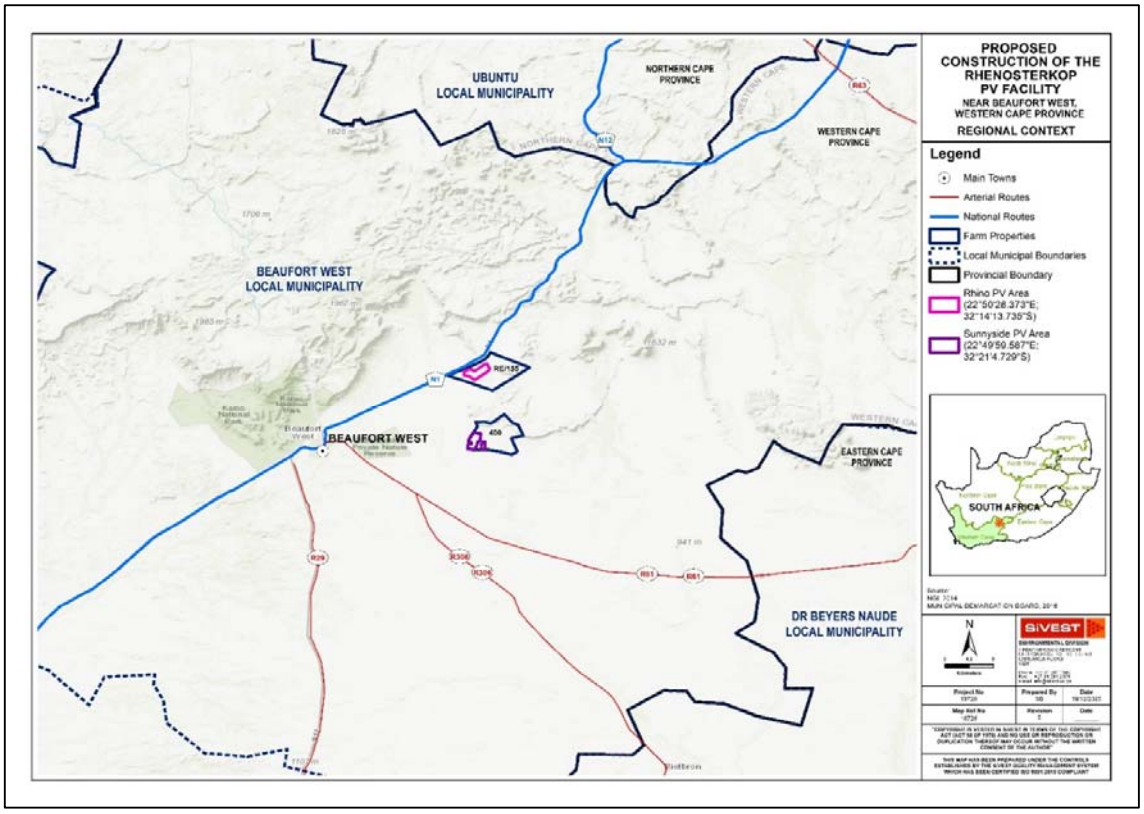

Figure 1: Regional context of the Rhenosterkop PV Facility

SiVEST SA (Pty) Ltd's (SiVEST) Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the required Environmental

Assessment (EA) application process in terms of the Environmental Impact Assessment Regulations, 2014 as amended (EIA Regulations), promulgated under Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended (NEMA) for proposed development and associated infrastructure. The proposed solar energy facility (SEF) and associated infrastructure are to be situated within a Renewable Energy Development Zone (REDZ), namely Zone 11 Beaufort West, which have formally been gazetted in South Africa as per Government Notice (GN) No. 114 of 2018 and 144 of 2021 enacted under of Section 24(3) of the NEMA, for the purpose of development of solar and wind energy generation facilities. Thus, a Basic Assessment (BA) process in terms of the EIA Regulations, is being undertaken.

The proposed project is envisaged to generate an output of up to 500 megawatts (MW) alternating current (AC) energy, the project is being developed either to supply the national grid under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) or similar procurement programme under the Integrated Resource Plan (IRP).

The electrical grid energy connection infrastructure associated with this project is being done separately by the applicant, thus this BA only covers the SEF.

1.1 Content Requirements for an Environmental Management Programme

The content requirements for an EMPr (as provided in Appendix 4 of the EIA Regulations 2014, as amended), as well as details of which section of the report fulfils these requirements, are shown in **Table 1**.

Table 1: Content requirements for a EMPr

2014 EIA Regulations, as amended.	Requirements for an EMPr	Location in this EMPr
Appendix 4, Section 1. (1)	An EMPr must comply with section 24N of the Act and include -	Refer to relevant reference sections below:
Appendix 4, Section 1 (a)	Details of –	-
	(i) The EAP who prepared the EMPr; and	Section 3.1 Section 3.2
	(ii) The expertise of that EAP to prepare an EMPr, including a curriculum vitae.	Section 3.2
Appendix 1, Section 3 (b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 4.1
Appendix 4, Section 1 (c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 4
Appendix 4, Section 1 (d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including─ (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and	Section 9

2014 EIA Regulations, as amended.	Requirements for an EMPr	Location in this EMPr
	(v) where relevant, operation activities;	
Appendix 4, Section 3 (f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 9
Appendix 4, Section 3 (g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 9
Appendix 4, Section 3 (h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 9
Appendix 4, Section 3 (i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 8 Section 9
Appendix 4, Section 3 (j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 9
Appendix 4, Section 3 (k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 9
Appendix 4, Section 3 (l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 9
Appendix 4, Section 3 (m)	an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 11
Appendix 4, Section 3 (n)	any specific information that may be required by the competent authority.	Section 7.3 Section 10
Appendix 4 Section 2	Where a GN gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	Generic EMPr has been compiled and included.

2. DETAILS OF APPLICANT

2.1 Name and contact details of the Applicant

Name and contact details of Applicant:

Table 2: Name and contact details of the applicant

Business Name of Applicant	K2022578692 South Africa (Pty) Ltd
Physical Address	Unit 15, Canal Edge 2, Tyger Waterfront, Bellville, Cape Town
Postal Address	Same as physical
Postal Code	7530
Telephone	079 367 2593

Email	dirk@agv-za.co.za

3. DETAILS AND EXPERTISE OF THE EAP

3.1 Name and contact details of the Environmental Assessment Practitioner

The table below provides the name and contact details of the Environmental Assessment Practitioner (EAP) for the project:

Table 3: Name and contact details of the Environmental Consultant who prepared the report

Business Name of EAP	SiVEST SA (PTY) Ltd
Name of Lead EAP	Zikhona Wana
Physical Address	16 Chester Road, Rondebosch, Cape Town
Postal Address	Same as physical
Postal Code	7701
Telephone	021 689 2733
Email	ZikhonaW@sivest.com

3.2 Names and expertise of the EAPs

The table below provides the names of the people who prepared this report and their expertise:

Table 4: Names and details of the expertise of the EAP's involved in the preparation of this report

Name EAP representative	Educational Qualifications	Professional Registrations/ Affiliations	Experience (years)
Natalie Pullen	MSc Environmental Biotechnology	*Reg. EAP*[1] with EAPASA[2], Reg. No. 2018/132	20
Luvanya Naidoo	BSc (Hons) Environmental Monitoring and Modelling	*Reg. EAP* with EAPASA Registration No. 2019/1404 *Pr.Sci.Nat*[3] with SACNASP[4] Registration No. 126107	14
Zikhona Wana	BTech Environmental Sciences	*Reg. EAP* with EAPASA, Registration No. 2019/555 *Pr.Sci.Nat* with SACNASP, Registration No. 119417	10

CV's of SiVEST personnel and EAP declarations are attached in **Appendix A.**

3.3 Names and expertise of the specialists

Specialist studies have been conducted in terms of the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) And 44 of the NEMA when applying for EA, as well as the EIA Regulations, 2014 (as amended). The table

[1] Registered Environmental Assessment Practitioner
[2] Environmental Assessment Practitioners Association of South Africa
[3] Professional Natural Scientist
[4] South African Council for Natural Scientific Professions

below provides the names of the specialists involved in the project:

Table 5: Names of specialists involved in the project

Company/ Name	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
SRK Consulting (Pty) Ltd	Kelly Armstrong	Landscape/ Visual Assessment	BSocSc (Hons) in Environmental and Geographical Studies	5
CTS Heritage (Pty) Ltd	Jenna Lavin	Cultural Heritage, Archaeological, and Palaeontological Assessment	MSc. Archaeology And Palaeoenvironments Professional Archaeologist with ASAPA[5] Accredited Professional Heritage Specialist with APHP[6]	8
Johann Lanz	Johann Lanz	Agriculture Compliance Statement (Desktop)	MSc. Environmental Geochemistry *Pr.Sci.Nat.* (Soil Science) with SACNASP, Reg. No. 400268	24
AfriAvian (Pty) Ltd	Albert Froneman	Avifaunal Assessment	MSc. Conservation Biology *Pr.Sci.Nat.* (Zoological Science) with SACNAP, Reg. No. 400177	25
M2 Environmental Connections (Pty) Ltd	Hanjo Fourie	Aquatic Biodiversity (including Wetland) Compliance Statement	BSc. Environmental Management *Cert.Sci.Nat.* (Aquatic Science) with SACNASP, Reg No. 125420	11
PeraGaGE Consulting (Pty) Ltd	Duan Swart	Geotechnical Assessment (Desktop)	MSc Engineering Geology *Pr.Sci.Nat.* (Geological Science) with SACNASP, Reg. No. 137543	6
Urban-Econ Development Economists (Pty) Ltd	Pierre van Jaarsveld	Socio-Economic Assessment	B.TRP (Honours) Regional and Town Planning	17
M2 Environmental Connections (Pty) Ltd	Reuhl Lombard	Terrestrial Biodiversity (including Animal and Plant Species)	MSc Zoology *Pr.Sci.Nat* (Environmental Science) with SACNASP, Reg. No. 128735	7
iSHECON (Pty) Ltd	Debbie Mitchell	Risk Assessment (BESS)	MSc Process Safety & Loss Prevention	25
iWink (Pty) Ltd	Iris Wink	Transport Assessment	MSc Civil Engineering *Pr.Eng* with ECSA[7], Reg No. 20110156	20

[5] Association of Southern African Professional Archaeologists
[6] Association of Professional Heritage Practitioners
[7] Engineering Council of South Africa

4. ACTIVITY INFORMATION

4.1 Project Description

The application site, two parcels of land have a combined capacity of 1 080.15 hectares (ha) in extent.

In summary, the proposed Solar PV development will include the following components:

4.1.1 PV panels

- Mono- or bifacial panels will be used, not thin film.
- Panel width and height (TBC during detail design phase).
- Expected panel dimensions:
    - Width: 1 – 1.3 m
    - Height: 2 – 2.4 m

4.1.2 Access roads

- 6 – 8 m access roads +/-15%
- 4 m internal roads

4.1.3 On-site Substation

- 1 ha
- One 132 kV (1 per site)
- 21 m height
- Substation will step up voltage from 33 to 132 kV.
- Various transformers will be located within the PV area. These will combine the power from multiple inverters and step up the supply voltage from 800 volts to 33 kV. The expected capacity of these transformers are in the range of 2.5 megavolt ampere each.
- Note that the voltage levels are estimates and subject to confirmation/change during the detail design phase of the project.

4.1.4 Construction camp

- 1 per site
- Temporary containers: 1 ha per site

4.1.5 Temporary construction laydown / staging area

- 2 ha within the development area – laydown
- 2 x on Rhino solar PV site
- 1 x on Sunnyside solar PV site

4.1.6 Operation and Maintenance buildings

- 1 ha construction camps will become the operational site camp offices, workshop areas, operation and maintenance (O&M) building, permanent parking area, storage area.

4.1.7 On-site Independent Power Producer Electrical infrastructure

- Medium voltage cabling will link the PV installation with the grid connection infrastructure at 33 kV.
- The grid connection infrastructure will step up the voltage to 132 kV, high voltage.

4.1.8 Fencing

- Triple wire fence, electrical fencing
- Length – Rhino solar PV at 11 076 m, Sunnyside solar PV west at 11 408.45 m and east at 3 959 m
- Maximum height 3 m

4.1.9 Proximity to grid connection

- The facility is planned to connect to a new Main Transmission Substation (MTS) which will be established near the project site. The new MTS will tie in via loop-in-loop-out connection to the existing Droërivier/Hydra 400 kV lines. Alternatively, the project can tie into the existing Droërivier MTS via a 132 kV connection.
- This does not form part of this assessment.

4.1.10 Site Access

- Rhino PV: Turn southward off from N1, 30 km outside Beaufort-West, between Beaufort-West and Three Sisters. This will lead to a Transnet service road used by the local population for access to farms and smallholdings. The site will be located immediately to the right at the T-junction of the road that connects the service road and the N1.
- Sunnyside PV: Approximately 3.2 km outside Beaufort-West on the R61, turn onto the Hopewell Road in an Eastern direction. After 24.1 km, turn right onto Farm 400 through the gate to the farm. This will be the main access point to the site.

4.1.11 Boreholes and storage tanks (if applicable)

- Existing boreholes will be tested. If no potential boreholes (existing), new boreholes will be required.
- Water will be stored on site using jojo tanks storing borehole or municipal water.

4.1.12 BESS

- Up to 5 to 5.8 ha per site
- The final BESS capacity is subject input by DMRE, NERSA and Eskom regarding the dispatchability and ancillary services to be provided by the hybrid Solar PV and BESS facility. This may range between 77 MW/ 308 MWh, in line with the latest ESIPPPP bidding round 2, and 240 MW/ 960 MWh, in line with 4 hours of rated capacity. These stated capacities are also subject to the charging, discharging and augmentation regime established during the subsequent design phases of the project.
- The technology and capacity are still be to determined.

The Layout Plans are reflected below in **Figure 3** and **Figure 4**.

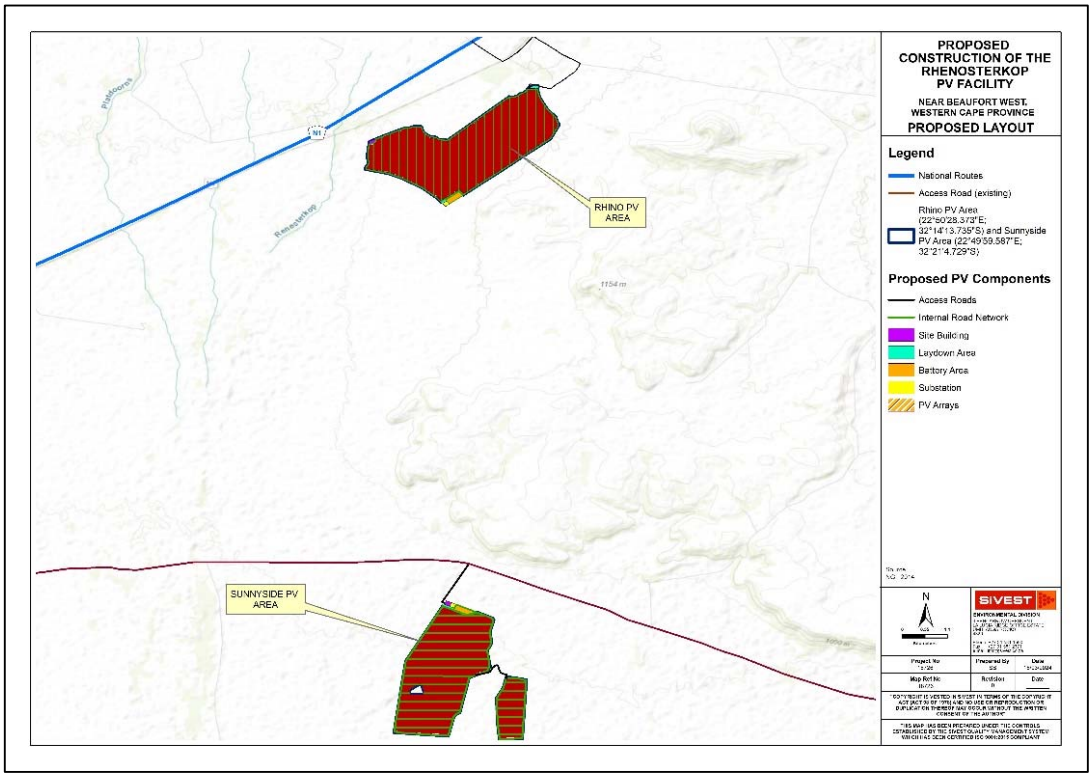

Figure 2: Combined layout plan

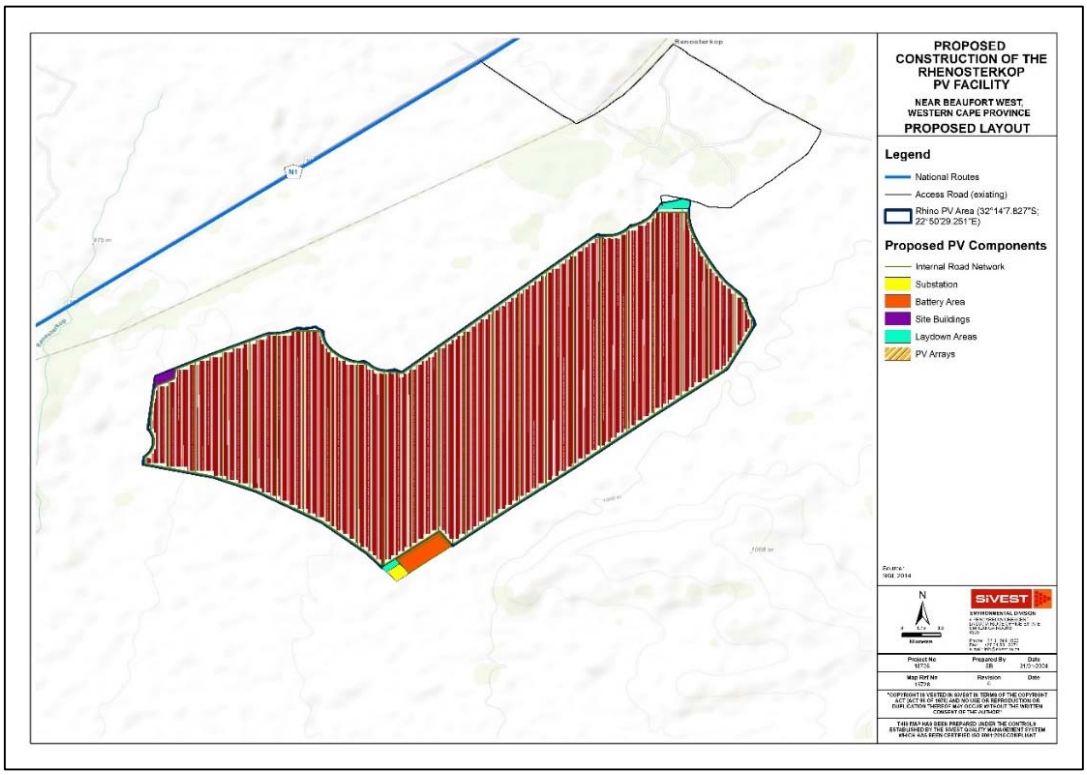

Figure 3: Layout showing proposed location of solar PV panels (Rhino)

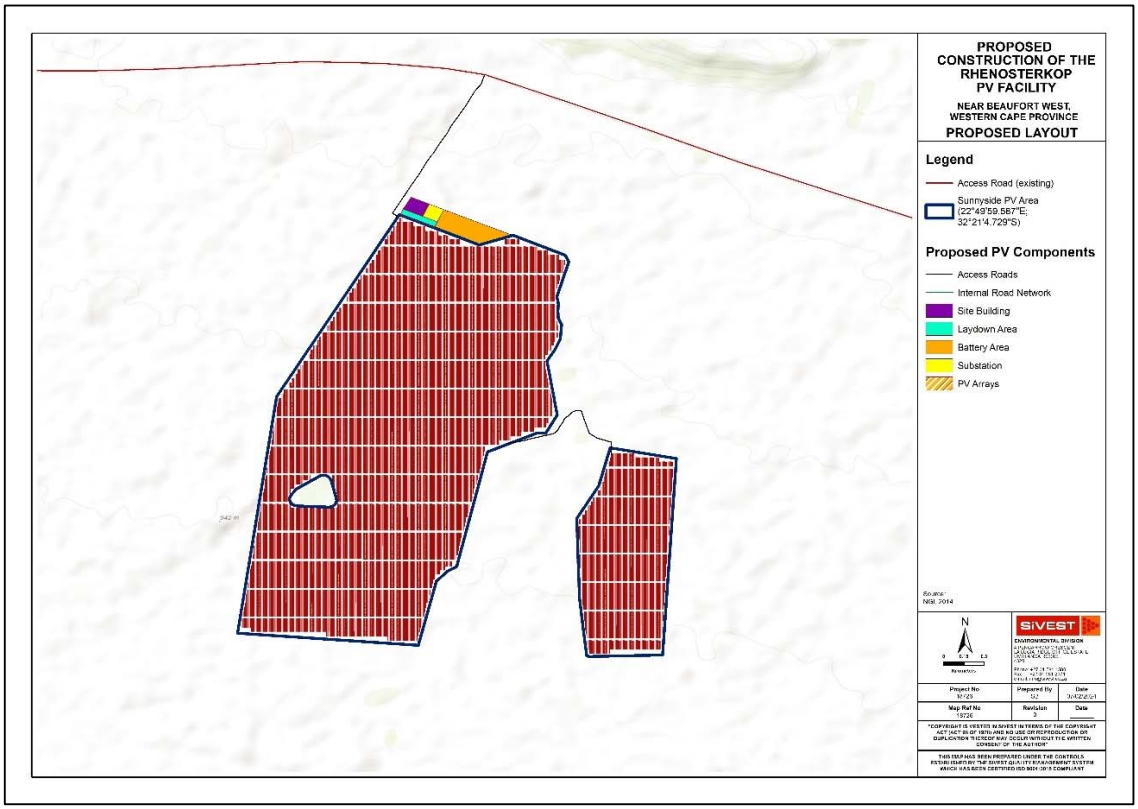

Figure 4: Layout showing proposed location of solar PV panels (Sunnyside)

The solar PV panels and all other project infrastructure will be placed strategically within the development area based on environmental constraints.

A summary of the project technical details is provided in **Table 6**.

Table 6: Technical Detail Summary

Component	Description/ Dimensions on Rhino site	Description/ Dimensions on Sunnyside site
Location of site (centre point)	32°14'9.254"S; 22°50'26"E	22°49'59.587"S; 32°21'4.729"E
Application site area	Remainder of farm Rhenosterkop 155: 4 247 ha, only 563 ha available for development	Farm 400: 4 035 ha, only 525.2 ha available for development
Solar PV development area	533.94 ha	494.93 ha
SG codes	Remainder of farm Rhenosterkop 155: C09000000000015500000	Farm 400: C09000000000040000000
Export capacity	Up to 250 MW	Up to 250 MW
PV Panels	Mono- or bifacial panels will be used, not thin film Panel width and height (to be confirmed during detailed design phase) Expected panel dimensions: Width: 1 – 1.3 m Height: 2 – 2.4 m	Mono- or bifacial panels will be used, not thin film Panel width and height (to be confirmed during detailed design phase) Expected panel dimensions: Width: 1 – 1.3 m Height: 2 – 2.4 m

Component	Description/ Dimensions on Rhino site	Description/ Dimensions on Sunnyside site
On-site Substation	One 132 kV 21 m height 1 ha Substation will step up voltage from 33 to 132 kV Various transformers will be located within the PV area. These will combine the power from multiple inverters and step up the supply voltage from 800 V to 33 kV. The expected capacity of these transformers are in the range of 2.5 megavolt ampere each Note that the voltage levels are estimates and subject to confirmation/change during the detail design phase of the project	One 132 kV 21 m height 1 ha Substation will step up voltage from 33 to 132 kV Various transformers will be located within the PV area. These will combine the power from multiple inverters and step up the supply voltage from 800 V to 33 kV. The expected capacity of these transformers are in the range of 2.5 megavolt ampere each Note that the voltage levels are estimates and subject to confirmation/change during the detail design phase of the project
BESS	5 to 5.8 ha The final BESS capacity is subject input by DMRE, NERSA and Eskom regarding the dispatchability and ancillary services to be provided by the hybrid Solar PV and BESS facility. This may range between 77 MW/ 308 MWh, in line with the latest ESIPPPP bidding round 2, and 240 MW/ 960 MWh, in line with 4 hours of rated capacity. These stated capacities are also subject to the charging, discharging and augmentation regime established during the subsequent design phases of the project.	5 to 5.8 ha The final BESS capacity is subject input by DMRE, NERSA and Eskom regarding the dispatchability and ancillary services to be provided by the hybrid Solar PV and BESS facility. This may range between 77 MW/ 308 MWh, in line with the latest ESIPPPP bidding round 2, and 240 MW/ 960 MWh, in line with 4 hours of rated capacity. These stated capacities are also subject to the charging, discharging and augmentation regime established during the subsequent design phases of the project.
Proximity to grid connection	The facility is planned to connect to a new Main Transmission Substation (MTS) which will be established near the project site. The new MTS will tie in via loop-in-loop-out connection to the existing Droërivier/Hydra 400 kV lines. Alternatively, the project can tie into the existing Droërivier MTS via a 132 kV connection. It should be noted that this does not form part of this application	The facility is planned to connect to a new MTS which will be established near the project site. The new MTS will tie in via loop-in-loop-out connection to the existing Droërivier/Hydra 400 kV lines. Alternatively, the project can tie into the existing Droërivier MTS via a 132 kV connection. It should be noted that this does not form part of this application
O&M buildings	The 1 ha construction camps will become the operational site camp offices, workshop areas, O&M building, permanent parking area, storage area	The 1 ha construction camps will become the operational site camp offices, workshop areas, O&M building, permanent parking area, storage area
Access roads	6 – 8 m access roads +/-15% 4 m internal roads	6 – 8 m access roads +/-15% 4 m internal roads
Site Access	Turn southward off from N1, 30 km outside Beaufort-West, between Beaufort-West and Three Sisters. This will lead to a Transnet service road used by the local population for access to farms and smallholdings. The site will be located immediately to the right at the T-junction of the road that connects the service road and the N1	Approximately 3.2 km outside Beaufort-West on the R61, turn onto the Hopewell Road in an Eastern direction. After 24.1 km, turn right onto Farm 400 through the gate to the farm. This will be the main access point to the site
Construction camp	One 1 ha temporary containers	One 1 ha temporary containers

Component	Description/ Dimensions on Rhino site	Description/ Dimensions on Sunnyside site
Temporary construction laydown/ staging area	2 ha within the development area – laydown (x 2)	2 ha within the development area – laydown (x 1)
Fence/ security	Triple wire fence, electrical fencing: Maximum height 3 m Length – 11 076 m	Triple wire fence, electrical fencing: Maximum height 3 m Length – Sunnyside PV west at 11 408.45 m and east 3 959 m
Boreholes and storage tanks (if applicable), per site	Existing boreholes will be tested. If no potential boreholes (existing), new boreholes will be required. Water will be stored on site using jojo tanks storing borehole or municipal water.	Existing boreholes will be tested. If no potential boreholes (existing), new boreholes will be required. Water will be stored on site using jojo tanks storing borehole or municipal water.

4.2 NEMA Listed Activities

The EIA Regulations promulgated under Section 24(5) of the NEMA and published in GN No. R. 326 list activities which may not commence without environmental authorization from the Competent Authority. The proposed activity is identified in terms of GN No. R. 327, 325 and 324 for activities which must follow a full Environmental Impact Assessment Process. However, the project falls within a REDZs as such a BA was executed. The project will trigger the following listed activities:

Table 7: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended in 2017), applicable to the proposed project

Activity No.:	Relevant Listed Activity as set out in of the EIA Regulations	Describe the portion of the proposed project to which the applicable Listed Activity relates	
		Rhino	Sunnyside
Listing Notice 1			
11.(i)	The development of facilities or infrastructure for the transmission and distribution of electricity: (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kV; or…	The developer proposes to install 33 kV MV underground cables and 132 kV on-site substation.	The developer proposes to install 33 kV MV underground cables and 132 kV on-site substation.
12.(ii)(a)(c)	The development of:…(ii) infrastructure or structures with a physical footprint of 100 square metres (m^2) or more; where such development occurs: (a) within a watercourse;…(c) if no development setback exists, within 32 m of a watercourse, measured from the edge of a watercourse…	Drainage lines were delineated within and outside the site, the development will include developing over drainage lines.	Wetland and drainage lines were delineated within and outside the sites, the development will encroach wetlands and include developing over drainage lines.
19.	The infilling or depositing of any material of more than 10 cubic metres (m^3) into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 m^3 from a watercourse…	Drainage lines were delineated within and outside the site, some drainage lines are envisaged to be infilled.	Drainage lines and wetlands were delineated within and outside the sites, the development will either encroach the wetlands and some drainage lines are

Activity No.:	Relevant Listed Activity as set out in of the EIA Regulations	Describe the portion of the proposed project to which the applicable Listed Activity relates	
		Rhino	Sunnyside
			envisaged to be infilled on both sites.
24.(ii)	The development of a road:…(ii) with a reserve wider than 13.5 m, or where no reserve exists where the road is wider than eight metres…	Access roads (upgrading) of 6 m to 8 m +/-15% are planned as part of the Rhino and Sunnyside solar PV facility.	Access roads (upgrading) of 6 m to 8 m +/-15% are planned as part of the Rhino and Sunnyside solar PV facility.
28.(ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:…(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 ha…	The proposed site is currently used and zoned for agricultural purposes, i.e., grazing. The proposed development will result in an area of agricultural land greater than 1 000 ha being transformed to industrial/ commercial use.	The proposed sites are currently used and zoned for agricultural purposes, i.e., grazing. The proposed development will result in an area of agricultural land greater than 1 000 ha being transformed to industrial/ commercial use.
48.i.(a)(c)	The expansion of (i) infrastructure or structures where the physical footprint is expanded by 100 m^2 or more…where such expansion occurs (a) within a watercourse;…or (c) if no development setback exists, within 32 m of a watercourse, measured from the edge of a watercourse…	The proposed development will entail the expansion (upgrading) of roads by approximately 186 000 m^2 within drainage lines.	The proposed development will entail the expansion (upgrading) of roads by approximately 150 000 m^2 within drainage lines and 32 m from the edge of wetlands.
56.(ii)	The widening of a road by more than six metres, or the lengthening of a road by more than 1 kilometre:…(ii) where no reserve exists, where the existing road is wider than eight metres...	Internal and access roads (upgrade) of 4 m and 6 m to 8 m +/-15%, respectively, are planned as part of the SEF (36.26 km).	Internal and access roads (upgrade) of 4 m and 6 m to 8 m +/-15%, respectively, are planned as part of the SEF (44.26 km).
Listing Notice 3			
4.i.ii.(aa)	The development of a road wider than 4 m with a reserve less than 13.5 m. **i. Western Cape** ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation…	Parts of the proposed site were delineated as “Grassy Shrubland” and “Arid Karoo Shrubland" with some designated “Calcrete Ridge” and “Degraded Sandveld”. Access and internal roads (upgrading) of 6 to 8 m +/-15% and 4 min width, respectively, are planned where indigenous vegetation exists on site.	Parts of the proposed site were delineated as “Grassy Shrubland” and “Arid Karoo Shrubland" with some designated “Calcrete Ridge” and “Degraded Sandveld”. Access and internal roads (upgrading) of 6 to 8 m +/-15% and 4 min width, respectively, are planned where indigenous vegetation exists on the sites.
12.i.ii.	The clearance of an area of 300 m^2 or more of indigenous vegetation… **i. Western Cape** ii. Within critical	Parts of the proposed site were delineated as “Grassy Shrubland” and	

Activity No.:	Relevant Listed Activity as set out in of the EIA Regulations	Describe the portion of the proposed project to which the applicable Listed Activity relates	
		Rhino	Sunnyside
	biodiversity areas (CBAs) identified in bioregional plans;	"Arid Karoo Shrubland" with some designated "Calcrete Ridge" and "Degraded Sandveld". The site measures approximately 561.17 ha and therefore approximately 5 000 000 m^2 of this vegetation will be cleared in preparation for the development. The site encroaches a CBAs with no CBAs situated inside the site.	
14.(ii)(a)(c)i. i.(ff)	The development of…(ii) infrastructure or structures with a physical footprint of 10 m^2 or more; where such Development occurs: (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 m of a watercourse, measured from the edge of a watercourse… **i. Western Cape** i. Outside urban areas:… (ff) CBAs or ecosystem service areas as identified in systematic biodiversity plans adopted by the CA or in bioregional plans…	The infrastructure development on site which encroaches a CBAs, is 5 611 700 m^2 and some will be situated within and in 32 m of wetlands. The site is situated 30 km outside of Beaufort West.	
18.(i)(ii)(aa)	The widening of a road by more than four metres, or the lengthening of a road by more than one kilometre. **(i) Western Cape** (i) Areas zoned for use as public open space or equivalent zoning; (ii) All areas outside urban areas: (aa) Areas containing indigenous vegetation…	Parts of the proposed site were delineated as "Grassy Shrubland" and "Arid Karoo Shrubland" with some designated "Calcrete Ridge" and "Degraded Sandveld". Access roads (upgrading) of 6 to 8 m +/-15% are planned as part of the SEF (36.26 km). The site is situated 30 km outside of Beaufort West.	Parts of the proposed site were delineated as "Grassy Shrubland" and "Arid Karoo Shrubland" with some designated "Calcrete Ridge" and "Degraded Sandveld". Access roads (upgrading) of 6 to 8 m +/-15% are planned as part of the SEF (44.26 km) solar PV facility. The sites are situated 27 km outside of Beaufort West.
23.(ii)(a)(i)(i)(ff)	The expansion of:…(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs: (a) within a watercourse; **(i) Western Cape** (i) Outside urban areas: (ff) CBAs or	Parts of the proposed site were delineated as "Grassy Shrubland" and "Arid Karoo Shrubland" with some designated "Calcrete Ridge" and "Degraded Sandveld".	

Activity No.:	Relevant Listed Activity as set out in of the EIA Regulations	Describe the portion of the proposed project to which the applicable Listed Activity relates	
		Rhino	Sunnyside
	ecosystem service areas as identified in systematic biodiversity plans adopted by the CA or in bioregional plans;	Drainage lines were also delineated on or in close proximity to site. The site encroaches a CBAs. Expansion (186 000 m^2) of existing internal roads is planned to occur within or close to these resources. The site is situated 30 km outside of Beaufort West.	
Listing Notice 2			
1.	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 MW or more…	The proposed development will entail the construction of a SEF where the respective electricity output will be up to 500 MW. In addition, the proposed SEF development will be located outside urban areas.	The proposed development will entail the construction of a SEF where the respective electricity output will be up to 500 MW. In addition, the proposed SEF development will be located outside urban areas.
15.	The clearance of an area of 20 ha or more of indigenous vegetation…	Parts of the proposed site were delineated as "Grassy Shrubland" and "Arid Karoo Shrubland" with some designated "Calcrete Ridge" and "Degraded Sandveld". The site measures approximately 533.94 ha and therefore indigenous vegetation of approximately 533.94 ha of vegetation will be cleared in preparation for the development.	Parts of the proposed site were delineated as "Grassy Shrubland" and "Arid Karoo Shrubland" with some designated "Calcrete Ridge" and "Degraded Sandveld". The site measures approximately 494.93 ha and therefore indigenous vegetation of approximately 494.93 ha of vegetation will be cleared in preparation for the development.

5. LOCATION OF THE ACTIVITY

5.1 Regional Locality

The proposed development is located approximately 20km to the east and north-east of Beaufort West within the Beaufort West Local Municipality, in the Western Cape Province (**Figure 6** below).

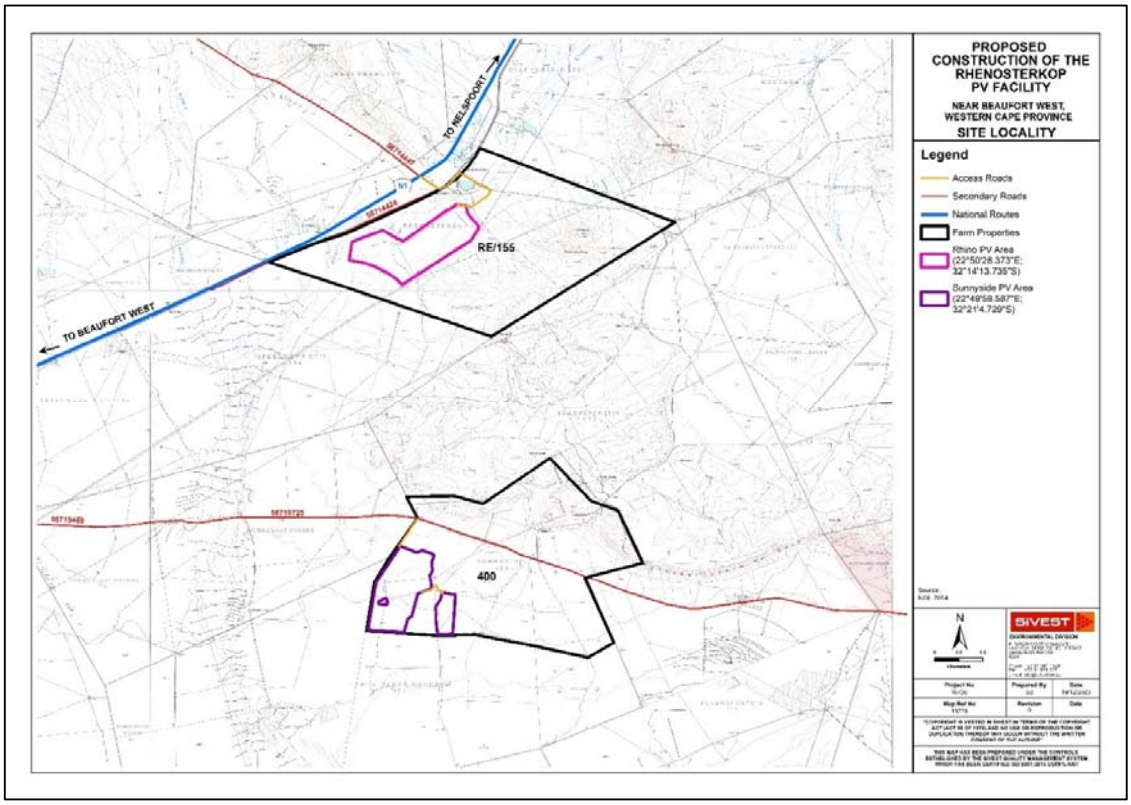

Figure 5: Site Locality

5.2 Summary of affected properties

Table 8: Summary of affected properties (including SG Codes and Farm Names)

Property name	21-digit SG code	Extent
Remainder of farm Rhenosterkop 155	C00900000000015500000	4 247 ha, only 563 ha available for development
Farm 400	C00900000000040000000	4 035 ha, only 525.2 ha available for development

5.3 Coordinates of the site

The centre point coordinates for the sites are as follows:

- Rhino site: 22°50'28.373"S; 32°14'13.735"E
- Sunnyside site: 22°49'59.587"S; 32°21'4.729"E

The geographical positioning systems (GPS) coordinates of the site and associated infrastructure have been included in **Table 9** and **Table 10**:

Table 9: GPS coordinates for the proposed Rhino SEF

Corner/ Point	South	East
SEF Site		
Coordinates at Corner Points (DD MM SS.sss)		

Corner/ Point	South	East
1	32°14’1.007”S	22°49’3.273”E
2	32°13’47.007”S	22°49’40.72”E
3	32°13’59.832”S	22°50’5.062”E
4	32°13’15.598”S	22°51’10.757”E
5	32°13’17.692”S	22°51’21.75”E
6	32°13’25.282”S	22°51’23.059”E
7	32°13’33.476”S	22°51’28.535”E
8	32°13’39.728”S	22°51’34.885”E
9	32°13’43.733”S	22°51’37.132”E
10	32°13’58.995”S	22°51’27.932”E
11	32°14’52.917”S	22°50’3.975”E
12	32°14’23.362”S	22°48’59.96”E
Coordinates at Centre Point (DD MM SS.sss)		
13	32°14'9.254"S	22°50'26"E
On-site Substation		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°14'50.452"S	22°50'1.733"E
2	32°14'48.614"S	22°50'4.797"E
3	32°14'50.953"S	22°50'6.941"E
4	32°14'52.847"S	22°50'4.017"E
Coordinates at Centre Point (DD MM SS.sss)		
5	32°14'50.814"S	22°50'4.49"E
Operation and Maintenance Building		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°14'1.212"S	22°49'3.247"E
2	32°13'59.235"S	22°49'8.232"E
3	32°14'1.658"S	22°49'7.898"E
4	32°14'3.551"S	22°49'2.912"E
Coordinates at Centre Point (DD MM SS.sss)		
5	32°14'1.435"S	22°49'5.307"E
BESS		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°14'47.369"S	22°50'4.145"E
2	32°14'40.595"S	22°50'14.809"E
3	32°14'43.982"S	22°50'17.882"E
4	32°14'50.819"S	22°50'7.031"E
Coordinates at Centre Point (DD MM SS.sss)		
5	32°14'46.115"S	22°50'10.543"E
Site Laydown Area 1		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°14'49.445"S	22°50'0.414"E
2	32°14'47.308"S	22°50'3.72"E
3	32°14'48.41"S	22°50'4.665"E
4	32°14'50.479"S	22°50'1.359"E
Coordinates At Centre Point (DD MM SS.sss)		
5	32°14'49.018"S	22°50'2.551"E
Site Laydown Area 2		
Coordinates At Corner Points (DD MM SS.sss)		
1	32°13'17.447"S	22°51'11.019"E
2	32°13'16.448"S	22°51'16.208"E
3	32°13'16.741"S	22°51'17.812"E
4	32°13'17.034"S	22°51'17.95"E

Corner/ Point	South	East
5	32°13'18.74"S	22°51'17.794"E
6	32°13'18.844"S	22°51'9.933"E
Coordinates At Centre Point (DD MM SS.sss)		
7	32°13'17.896"S	22°51'13.898"E
Site Access Road		
Coordinates (DD MM SS.sss)		
Start	32°12'41.222"S	22°50'24.815"E
Middle	32°12'43.792"S	22°51'24.434"E
End	32°13'17.371"S	22°51'11.071"E
Internal Road Network		
Coordinates (DD MM SS.sss)		
Start	32°13'19.084"S	22°51'16.211"E
Middle	32°14'10.652"S	22°50'21.731"E
End	32°14'23.464"S	22°49'2.421"E

Table 10: GPS coordinates for the proposed Sunnyside SEF

Corner/ Point	South	East
SEF Site		
Coordinates at Corner Points (DD MM SS.sss)		
West		
1	32°20'11.293"S	22°50'1.781"E
2	32°20'18.21"S	22°50'20.804"E
3	32°20'16.481"S	22°50'29.45"E
4	32°20'21.02"S	22°50'41.771"E
5	32°20'21.885"S	22°50'42.852"E
6	32°20'30.748"S	22°50'40.042"E
7	32°20'35.936"S	22°50'40.042"E
8	32°20'46.095"S	22°50'37.448"E
9	32°20'59.065"S	22°50'39.826"E
10	32°21'4.037"S	22°50'37.448"E
11	32°21'3.388"S	22°50'35.503"E
12	32°21'8.36"S	22°50'22.533"E
13	32°21'39.271"S	22°50'10.644"E
14	32°21'55.051"S	22°50'6.104"E
15	32°21'52.025"S	22°49'22.656"E
16	32°20'54.958"S	22°49'31.951"E
East		
1	32°21'7.063"S	22°50'52.796"E
2	32°21'9.873"S	22°51'7.927"E
3	32°21'56.565"S	22°51'5.117"E
4	32°21'57.213"S	22°50'46.743"E
5	32°21'24.16"S	22°50'44.743"E
6	32°21'16.488"S	22°50'49.94"E
Coordinates at Centre Point (DD MM SS.sss)		
West		
17	32°21'4.037"S	22°49'58.971"E
East		
7	32°21'33.315"S	22°50'56.283"E
On-site Substation		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°20'8.683"S	22°50'9.006"E
2	32°20'9.961"S	22°50'12.308"E

Corner/ Point	South	East
3	32°20'12.731"S	22°50'10.859"E
4	32°20'11.474"S	22°50'7.535"E
Coordinates at Centre Point (DD MM SS.sss)		
5	32°20'10.643"S	22°50'9.879"E
Operation and Maintenance Building		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°20'7.042"S	22°50'4.616"E
2	32°20'8.661"S	22°50'8.856"E
3	32°20'11.474"S	22°50'7.365"E
4	32°20'9.684"S	22°50'2.783"E
Coordinates at Centre Point (DD MM SS.sss)		
5	32°20'9.151"S	22°50'5.916"E
BESS		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°20'9.961"S	22°50'12.5"E
2	32°20'16.098"S	22°50'28.843"E
3	32°20'18.293"S	22°50'20.874"E
4	32°20'14.244"S	22°50'10.284"E
Coordinates at Centre Point (DD MM SS.sss)		
5	32°20'14.628"S	22°50'17.998"E
Site Laydown Area 1		
Coordinates at Corner Points (DD MM SS.sss)		
1	32°20'9.977"S	22°50'2.778"E
2	32°20'12.908"S	22°50'10.807"E
3	32°20'14.183"S	22°50'10.074"E
4	32°20'11.092"S	22°50'2.109"E
Coordinates At Centre Point (DD MM SS.sss)		
5	32°20'11.793"S	22°50'5.996"E
Access Road		
Coordinates (DD MM SS.sss)		
West		
Start	32°19'37.751"S	22°50'22.916"E
Middle	32°19'53.17"S	22°50'11.781"E
End	32°20'8.589"S	22°50'3.214"E
East		
Start	32°21'6.41"S	22°50'28.27"E
Middle	32°20'58.272"S	22°50'45.831"E
End	32°21'8.337"S	22°50'52.898"E
Internal Road Network		
Coordinates (DD MM SS.sss)		
West		
Start	32°20'11.463"S	22°50'1.86"E
Middle	32°20'59.771"S	22°49'59.788"E
End	32°21'54.224"S	22°50'3.729"E
East		
Start	32°21'7.481"S	22°50'52.683"E
Middle	32°21'33.061"S	22°50'55.467"E
End	32°21'54.975"S	22°51'5.162"E

5.4 Study Area Description

The proposed SEFs are located approximately 20 km north east and east of Beaufort West within the Beaufort West Local Municipality in the Central Karoo District Municipality of the Western Cape

Province. Access to the site will be via existing roads. The Rhino site can be accessed from the N1, 30 km outside Beaufort-West, between Beaufort West and Three Sisters. Access to the Sunnyside solar PV site is gained approximately 3.2 km outside Beaufort-West on R61 and onto Hopewell Road in an easterly direction. After 24.1 km, the right leads onto Farm 400. Existing internal gravel roads with a width of 6 to 8 m (+/-15%) will be used within the solar PV facility, new internal gravel roads of approximately 4 m wide may, however, be constructed where necessary. There are approximately 17 renewable energy projects within ~35 km of the Rhenosterkop PV site.

The visual character of the project area is provided by the topography, vegetation and land use of the area, which is a predominantly rural environment characterised by large, undeveloped farms with natural vegetation predominantly used for grazing. The vast, undeveloped expanse of arid landscape can be experienced by receptors as desolate. The site and the surrounding area can be described as a rural landscape.

The proposed Rhino assessment area is characterized, equally, by shrubland and barren land while the Sunnyside site is majorly barren. Immediately outside the sites the landuses/ land cover comprises shrub and barren land with patches of grassland, cultivated land and water bodies. Throughout the general study area the land appears to be fallow shrubland, hence livestock farming is the dominant agricultural activity, although livestock densities appear to be relatively low. The geology and topography of the area, together with the semi-arid climate, provide the framework for the basic landscape features and visual elements of the study area. Both sites are largely underlain by alluvium, gravel, scree, sand and debris at the base of inselbergs comprising the Karoo Dolerite Suite. The sites are generally flat with elevated areas to the north-west and east of the Rhino SEF site and to the north of the Sunnyside SEF site.

The Central Karoo, in which the project falls, is characterised by low and erratic summer rainfall and dry winters. The annual rainfall in the region is low, 392 millimetres (mm) per annum, and temperature in summer a is hot, maximum 31.7°C, with cold winter nights, minimum 4.4°C. The arid climate is the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky soils are an additional limitation. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the site has low agricultural potential, and its agricultural use is limited to grazing only.

Refer to **Appendix D** for the summary of the specialist findings and recommendations for the Rhenosterkop PV facility.

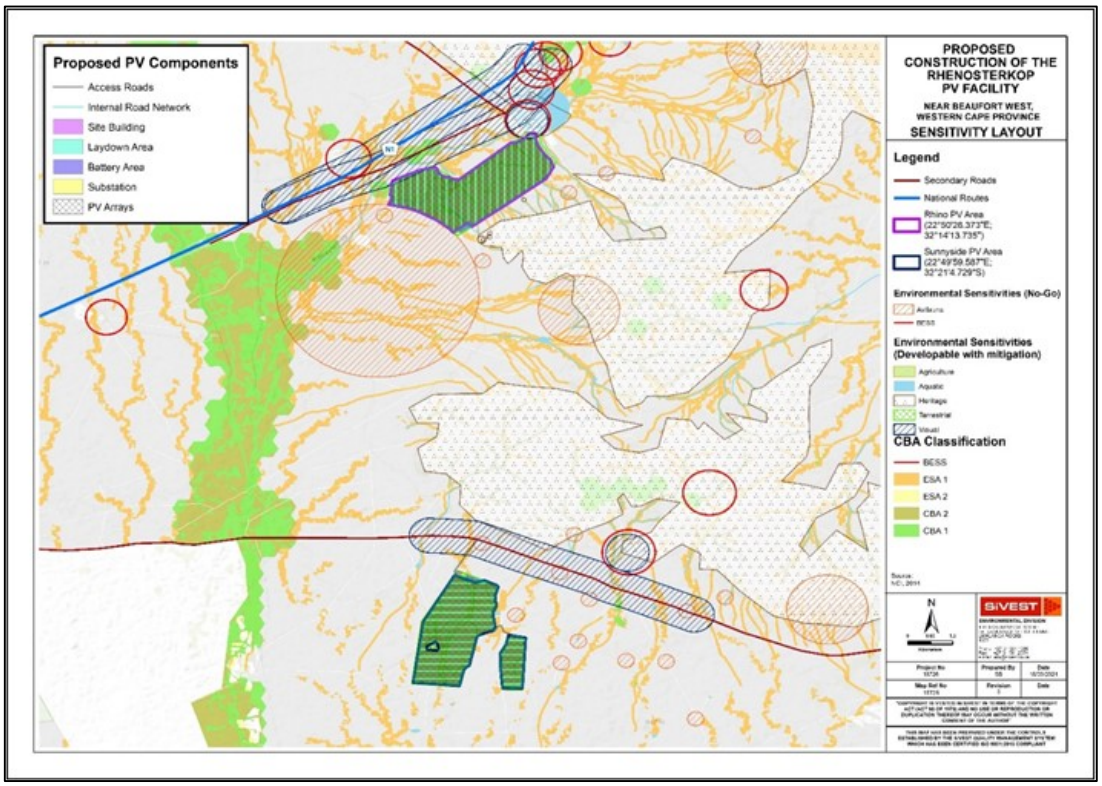

Figure 6: Combined Layout Plan with Sensitivity Overlay

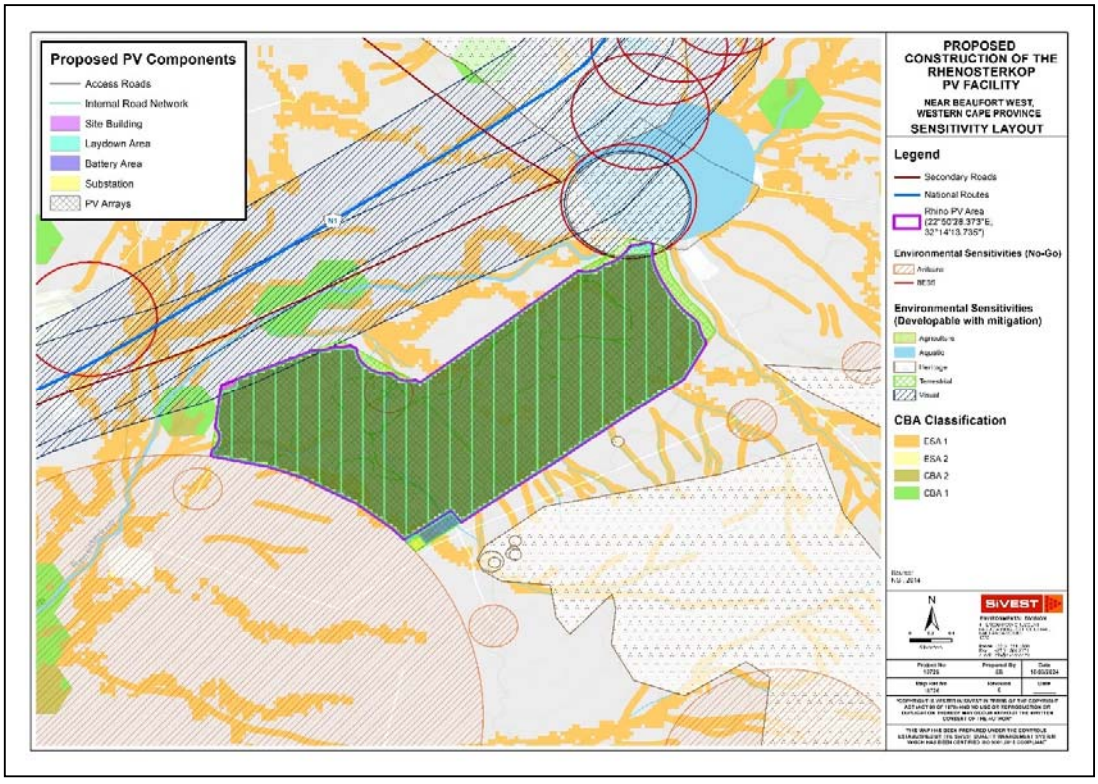

Figure 7: Proposed Rhino layout/ development footprint with site sensitivities

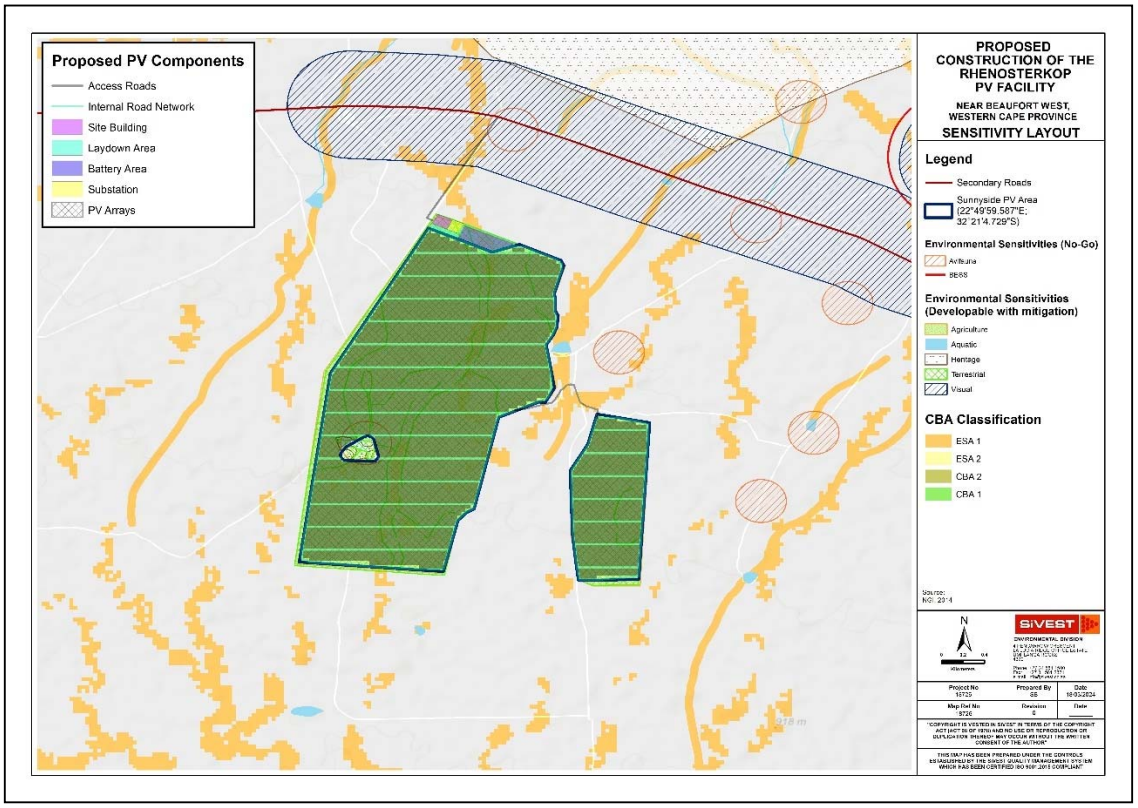

Figure 8: Proposed Sunnyside layout/ development footprint with site sensitivities

6. ENVIRONMENTAL MANAGEMENT PROGRAMME

6.1 Introduction

The EMPr has been prepared in order to comply with the requirements as stipulated in the NEMA.

This EMPr includes:

- Details and expertise of the EAP who prepared the EMPr including curriculum vitae;
- Project Description;
- Facility Illustration Plans;
- Mitigation measures as contained in the Impact Assessment Report;
- Recommendations and conclusions emanating from the specialist studies;
- Impact Management Objectives and Actions; and
- A copy of the EA (if granted).

6.2 Aim and Objectives of the EMPr

The aim of the EMPr is to:

- Identify those construction activities identified for the proposed development that may have a negative impact on the environment;

- Outline the mitigation measures that will need to be taken and the steps necessary for their implementation;
- Describe the reporting system to be undertaken during construction.

The objectives of the EMPr are to:

- Identify a range of mitigation measures which could reduce and mitigate the potential adverse impacts to minimal or insignificant levels.
- Provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site.
- Provide management structures that address the comments raised by I&APs pertaining to the development.
- Ensure that the environmental specifications are identified, effective and contractually binding so as to enable compliance on site.

6.3 Layout of the EMPr

The EMPr identifies the four phases of development as:

- Preconstruction Planning Phase Activities (Section 9.1)
- Construction Phase Activities (Section 9.2)
- Operation Phase Activities (Section 9.3)
- Decommissioning Phase Activities (Section 9.4)

The generic and specific provisions are included together under each phase for each environmental consideration. The generic provisions are the general environmental issues, procedures and controls that can be applied to the project and site as a whole. The specific provisions are those environmental issues, procedures and controls that are relevant to a particular section of the site. It should be understood that the EMPr is considered an evolving document and may be amended at any time by the relevant authorities (DFFE, DWS etc.).

7. LEGAL AND OTHER REQUIREMENTS

7.1 Compliance with Applicable Laws

The supreme law of the land is “The Constitution of the Republic of South Africa”, which states: “*Every person shall have the right to an environment which is not detrimental to his or her health or wellbeing*”. Laws applicable to the protection of the environment in terms of Environmental Management (and relating to construction activities) include but are not restricted to:

- Animals Protection Act, Act No. 71 of 1962
- Astronomy Geographic Advantage (Act No. 21 of 2007)
- Civil Aviation Act (Act No.13 of 2009)
- Conservation of Agricultural Resources Act, Act No. 43 of 1983
- Development Facilitation Act No. 67 of 1995
- Environment Conservation Act, Act No. 73 of 1989
- Environmental Planning Act, Act No. 88 of 1967
- Hazardous Substances Act, Act No. 15 of 1973

- Land Survey Act, Act No. 9 of 1921
- Minerals Act, Act No. 50 of 1991
- National Environmental Management: Air Quality Act, Act No. 39 of 2004);
- National Environmental Management: Biodiversity Act, Act No. 10 of 2004, as amended)
- National Environmental Management Act, Act No.107 of 1998
- NEMA EIA Regulations, 2014 (as amended)
- National Environmental Management: Protected Areas Act (NEM: PAA) (Act No. 57 of 2003, as amended)
- National Environmental Management: Waste Act, Act No. 59 of 2008
- National Forests Act (NFA) (Act No. 84 of 1998)
- The National Heritage Resources Act, Act No. 25 of 1999
- National Water Act, Act No. 36 of 1998
- National Dust Control Regulations (GN No. R. 827 of 1 November 2013
- National Road Traffic (Act No. 93 of 1996, as amended)
- Occupational Health and Safety Act, Act No. 85 of 1993
- Provincial and Local Government Ordinances and Bylaws
- Soil Conservation Act, Act No. 76 of 1969
- Subdivision of Agricultural Land (Act No. 70 of 1970, as amended)
- Water Services Act, Act No. 108 of 1997

Several regulations will be applicable to the construction phase of the project. These guidelines are mentioned in the EMPr tables. The EMPr forms part of the Contract Documentation and is thus a legally binding document.

7.2 Compliance with the Environmental Management Programme

A copy of the EMPr must be kept on site during the construction period at all times. The EMPr will be made binding on all contractors operating on the site and will be included within the Contractual Clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance with the Environmental Authorisation (EA) issued by DFFE.

It should be noted that in terms of Section 28 of the NEMA, those responsible for Environmental Damage must pay the repair costs both to the environment and human health and the preventative measures to reduce or prevent further pollution and/or environmental damage. (The polluter pays principle).

In terms of the EA, non-compliance of the EA may result in invalidation of the EA, criminal prosecution or other actions provided for in the NEMA (as amended) and associated regulations. Any non-compliance must result in an immediate stop to works being issued. The Contractor and Developer will be held liable for any damage and consequent rehabilitation to environmentally sensitive areas outside the site boundary. In the event of any dispute concerning the significance of a particular impact, the opinion of DFFE in respect of its significance will prevail.

National government, provincial government, local authorities or committees appointed in terms of the conditions of the EA or any other public authority shall not be held responsible for any damages or losses suffered by the authorisation holder or successor in title in any instance where construction or operation subsequent to construction is temporarily or permanently stopped for reasons of non-compliance by the authorisation holder with the conditions of authorisation as set out in this document or any subsequent document emanating from these conditions of authorisation.

7.3 Specific Conditions Pertaining to Authorisations

Should the Department of Forestry, Fisheries and the Environment (DFFE) issue an Environmental Authorisation (EA), this EMPr will be updated to include any additional pre-construction, construction, operation and decommissioning conditions stipulated in the EA not already included below.

A water use license will be applied for and may become applicable to the proposed project at a later stage.

Specific conditions pertaining to regulatory processes, or Licensee / Holder of the Authorisation requirements, have not been included within the EMPr and will only be included on finalization of the EMPr (pending decision). These conditions are to be undertaken by the Licensee / Holder of the Authorisation prior to the commencement of construction.

Frequency of Environmental Audits as per the conditions of the EA must be adhered to.

8. PROJECT RESPONSIBILITIES

8.1 Responsible Parties and associated roles

As described above, **Table 11** provides a summary of the responsible parties and the auditing process to be carried out. The below may be updated based on the outcome of the Environmental process should additional responsibilities be identified.

Table 11: Responsible Parties and Auditing Process

TITLE	PARTY	ROLE DURING CONSTRUCTION	ROLE DURING OPERATION
Project Developer (Proponent)	K2022578692 South Africa (Pty) Ltd	Assume ultimate responsibility	Assume ultimate responsibility
Project Manager / RE	To be appointed by proponent	Project management To approve method statements that may be called for by either the PM or the ECO.	N/A
Contractor's Project Manager	To be appointed by the Contractor	Construction management	N/A
Main Contractor/s	There will be multiple contracts placed for the construction phase. These will cover civil earthworks and concrete, structural mechanical and electrical / instrumentation. There could also be the construction camp management contract. These may be managed by the Contractor's Project Manager (or other).	Main Contractor will undertake day to day construction activities covering aspects such as civil earthworks and concrete, structural mechanical and electrical / instrumentation.	N/A

TITLE	PARTY	ROLE DURING CONSTRUCTION	ROLE DURING OPERATION
Environmental Officer	To be appointed by Main Contractors	Day to day environmental responsibility, point of contact for Environmental Control Officer (ECO) To provide input into Method Statements.	N/A
ECO	To be appointed by Project Developer	Monthly audits Monthly report submission to competent authority	Annual audits Annual report submission to competent authority
Competent Authority	National Department of Forestry, Fisheries and the Environment (DFFE)	Conduct site visits when necessary.	Conduct site visits when necessary

9. IMPACT MANAGEMENT ACTIONS AND OUTCOMES

9.1 Pre-construction Phase

9.1.1 Site preparation

This section deals with the issues relative to site preparation during the pre-construction phase.

Table 12: Site preparation

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Appointment of ECO	• Appoint an ECO.	Holder of the EA	Undertake regular audits	Avoid construction delays. Ensure the EMPr is adhered to.	Continuous
Site demarcation	• Before construction begins, all areas to be developed must be clearly demarcated with fencing or orange construction barrier, or any other suitable material/manner where applicable. • All Construction Camps are to be fenced off in such a manner that unlawful entry is prevented, and access is controlled. All access points to the Construction Camp should be controlled by a guard or otherwise monitored, to prevent unlawful access. • Records of all environmental incidents (in line with Section 30 of NEMA, 1998) must be maintained and a copy of these records be made available to provincial department on request throughout the project execution.	Contractor	Undertake regular audits	Prevent unauthorized impact on the environment. Ensure safety of the workers, public and prevent loss/ damage to equipment. Ensure the conditions of the EA are adhered to. Compliance to all legislative requirements.	Continuous
Site clearing	• Site clearing must take place in a phased manner, as and when required. • Areas which are not to be constructed on within two months must not be cleared to reduce erosion risks. • The area to be cleared must be clearly demarcated and this footprint strictly maintained.	Holder of the EA/Contractor	Undertake regular audits	Site establishment undertaken responsibly. Sensitive areas identified and avoided.	Once off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	• Spoil that is removed from the site must be removed to an approved spoil site or a licensed landfill site. • The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. • Storm water must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow. • Storm water must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow.			Erosion management plan implemented and hydrological measures in place. Appropriate stormwater structures as informed by the Storm Water Management Plan that may be developed as part of the project.	
Construction Camp	• Site establishment shall take place in an orderly manner and all required amenities shall be installed at camp sites before the main workforce move onto site. • All construction equipment must be stored within the construction camp. • All associated oil changes etc. (no servicing) must take place within the camp over a sealed surface such as a concrete slab. • An area for the storage of hazardous materials must be established that conforms to the relevant safety requirements and that provides for spillage prevention and containment • All Construction Camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and must be readily accessible. • The Contractor must provide sufficient ablution facilities, in the form of portable / VIP toilets, at the Construction Camps, and shall conform to all relevant health and safety standards and codes. No pit latrines, French drain systems or soak away systems shall be allowed and toilets may not be situated within 100 meters of any surface water body or 1:100-year flood line. A sufficient number of toilets shall be provided to accommodate the number of personnel working in the area.	Contractor	Undertake regular audits	Prevent unauthorized impact on the environment. Ensure safety of the public and prevent loss/ damage equipment. Ensure EMP is adhered to. Compliance to all legislative requirements	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	• The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate sanitary activities be allowed. • No fires will be allowed and the Contractor must make alternative arrangements for heating. LP Gas may be used, provided that all required safety measures are in place. The Contractor shall take specific measures to prevent the spread of fires, caused by activities at the campsites. These measures may include appropriate instruction of employees about fire risks and the construction of firebreaks around the site perimeter.				
Training of site staff	• Environmental awareness training for construction staff, concerning at a minimum the general environmental awareness, conservation of fauna and flora, the prevention of accidental spillage of hazardous chemicals and oil; pollution of water resources (both surface and groundwater), air pollution and litter control and identification of archaeological artefacts. • Staff operating equipment (such as loaders, etc.) shall be adequately trained and sensitised to any potential hazards associated with their tasks. • No operator shall be permitted to operate critical items of mechanical equipment without having been trained by the Contractor and certified competent by the Project Manager. • Staff should be educated as to the need to refrain from indiscriminate waste disposal and/or pollution of local soil and water resources and receive the necessary safety training. • Staff must be trained in the hazards and required precautionary measures for dealing with these substances. • Spillage packs must be available at construction areas.	Contractor	Undertake regular audits	All staff members are aware of the EMPr requirements relevant to them. All waste managed according to approved the Method Statement compiled by the contractor and approved by the engineer and reviewed by ECO.	Continuous

9.1.2 Consultation

This section deals with the issues relative to consultation during the pre-construction phase.

Table 13: Consultation

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Consultation	• Provide a mechanism through which information could be exchanged between the project proponent and stakeholders. • Identify relevant stakeholders and engage them at applicable stages of the process. • Inform the public about the proposed construction process. • Surrounding communities must be kept informed, through the identified and agreed consultation channels, of the commencement of construction. • Work on site to be restricted to work hours. • Financial provision must be included for rehabilitation in terms of the Renewable Independent Power Producer Programme (REIPPP) financial model requirements. • An agreement/contract should be formalised between the landowner and the applicant, that will ensure that the rehabilitation does not leave any liability to future landowners.	Holder of the EA/ Contractor	Clear communication channels established	Continuous

9.1.3 Stakeholder Requirements

Table 14: Stakeholder Requirements

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Stakeholder requirements	• The following general recommendations are provided to prevent and manage the potential contamination emanating from the solar PV facility during the construction, operational and decommissioning phases: o It is recommended that a waste disposal facility provide written confirmation of sufficient capacity to accept any hazardous waste emanating from the proposed development. Frequent and appropriate	Holder of the EA/ Contractor	Audit reporting	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	disposal of both general and hazardous waste is necessary to prevent pollution of soil and groundwater. o With reference to chemical toilets and/or septic tanks, it is essential that on-site sanitation is managed appropriately to prevent any spills or leakages. o All cleaning substances that are to be used must not be toxic or harmful to the environment and must be responsibly managed to prevent the contamination of any nearby surface water resources and surrounding environment. o All hazardous substances stored on-site should be stored and sealed correctly, in a secured area. Proper storage will also ensure that fauna and flora does not come in direct contact with any hazardous products on-site. o Should on-site boreholes be used, it is imperative that the quality of the groundwater be assessed, given the nature of the substances stored on-site and the sensitivity of the area. o Lithium-ion batteries must have battery management systems (containment, automatic alarms and shut-off systems) to monitor and protect cells from overcharging or damaging conditions. o An emergency response plan is to be implemented in the event of a spill or leakage; staff onsite should be trained on how to deal with the clean-up of a hazardous substance; and the provision of spill kits on-site should be readily available in the event of an incident. o Recording and reporting of all electrolyte spills or leaks so that appropriate clean-up measures can be implemented. A copy of these records must be made available to authorities on request throughout the project lifecycle. o On-site battery maintenance should only be undertaken on impermeable surfaces with secondary containment measures. Any resulting hazardous substances must be disposed of appropriately. o Provision of suitable emergency and safety signage on-site, and demarcation of any areas which may pose a safety risk (including hazardous substances). Emergency numbers for the local police, fire			

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	department, Eskom and the local municipality must be placed in a prominent, clearly visible areas at each solar PV cluster. o No discharge of effluents or wash water from cement batching areas should be allowed to enter nearby watercourses. Runoff must be strictly controlled in the vicinity of any cement batching areas. o The storage of hazardous substances (i.e. diesel, petrol, transformer oils, lubricants, etc.) should be located on impervious surfaces with bunds (to accommodate 110% of the maximum allowable volume) around them to contain any fugitive spillages and/or leakages. o Earthmoving construction activities should ideally take place within the dry season to reduce the risk of sediment-laden runoff from the construction activities/site washing into any nearby watercourses. o The refuelling and/or repair of heavy earthmoving vehicles should not take place within any sensitive areas and should be conducted over a dedicated impervious area within the construction camp. • In the event of a significant spill or leak of hazardous substances (e.g. petrol and diesel) during the construction or operational phase, such incident(s) must be reported to all relevant authorities, including the Directorate: Pollution and Chemicals Management in accordance with section 30(5) of the NEMA pertaining to the control of incidents. • Any changes or deviations from the original planning during or prior to construction must immediately be communicated to this office. • As per supplied sketches it would appear as if Openserve infrastructure would not be affected. • However, care should still be taken should it become evident that there is in fact Openserve network present at the actual sites. Such lines should be treated in accordance with, and clearances stipulated in the Occupational Health and Safety Act no 85 of 1993, Electrical Machinery Regulations 20 - Crossings, and Electrical Machinery Regulations 15 – Clearances of Power Lines. If the specifications could not be met, all deviation costs will be for the applicant's account. We also refer to Section 25 of the Electronic Communication Act 36 of 2005.			

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	• Please notify this office immediately if you locate any Openserve plant not indicated. • It would be appreciated if this office can be notified within 30 days of completion of the construction work. Confirmation is required on completion of construction as per agreed requirements. • Should Openserve infrastructure be damaged while work is undertaken, kindly contact our representative immediately. • All Openserve rights remain reserved			

9.1.4 Avifauna

This section deals with the issues relative to the avifauna during the pre-construction phase.

Table 15: Avifauna

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA: ENTRAPMENT/ENTANGLEMENT IN FENCES					
Entrapment of medium and large terrestrial birds between the perimeter fences, leading to mortality	• A single perimeter fence should be used, if possible. • Replace at least the top two barbed strands with smooth wire to reduce entanglement risks, increasing the spacing between at least the top two wires (to a minimum of 30cm), and ensuring they are correctly tensioned will also reduce the entanglement risks.	Project Developer	Design the Facility with a single perimeter fence if possible.	Prevent mortality of avifauna	Once-off during the planning phase.
AVIFAUNA: DISPLACEMENT					

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA: ENTRAPMENT/ENTANGLEMENT IN FENCES					
Displacement of avifauna due to disturbance and habitat transformation during construction activities.	• An all-infrastructure exclusion zone should be implemented and maintained within 2.5km of the identified Martial Eagle nest and within 1km of the identified Verreaux's Eagle nests to avoid displacement due to disturbance	Project Developer	Design the Facility with recommended buffer zone around the nest sites.	Prevent displacement of avifauna	Once-off during the planning phase.
	• A solar panel exclusion zone buffer should be implemented and maintained around all surface water features such as dams and reservoirs (200m), as well as non-perennial drainage lines and associated herbaceous wetlands (150m), other than what is shown in the development layout plan.		Design the Facility with solar panel free buffer zones around surface water features.		
	• The recommendations of the Terrestrial Ecology specialist studies must be strictly implemented, especially as far as limitations of the construction footprints are concerned.				
Electrocution of priority species on the 33kV networks and substations.	• Design the facilities with underground cables as much as possible. • A raptor -friendly pole design must be used, and the pole design must be approved by the avifaunal specialist. • Due to the complicated design of the substation hardware, pro-active mitigation is not a practical option. Instead, the situation must be monitored, and should electrocutions of priority species be recorded, reactive mitigation could be applied in the form of insulation of live components	Project Developer	Design the Facility with underground cabling and where impractical, use a bird friendly pole design approved by the avifaunal specialist.	Prevention of electrocution mortality	Once-off during the planning phase.

9.1.5 Agriculture

This section deals with the issues relative to the agricultural landscape during the pre-construction phase.

Table 16: Agricultural

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Protection of soil resources: Erosion	Design an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.	Holder of the EA	Ensure that the storm water run-off control is included in the engineering design.	That disturbance and existence of hard surfaces causes no erosion on or downstream of the site.	Once-off during the design phase.

9.2 Construction Phase

9.2.1 Construction Camp

This section deals with the issues relative to the construction camp during the construction phase.

Table 17: Construction Camp

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME
Construction Camp: Site of construction camp	• The size of the construction camp must be aligned to the approved laydown area. • Adequate parking must be provided for site staff and visitors. The Contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion. • Suitable control measures over the Contractor's yard, plant and material storage to mitigate any visual impact of the construction activity must be implemented.	Holder of the EA/Contractor	Ensure the conditions of the EA are adhered to. Compliance to all legislative requirements.	Once-off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME
	• No construction should occur in an area of high or unique agricultural value, or in an area under cultivation.		Impacts avoided or managed as per specialist recommendations.	
Construction Camp: Storage of materials (including hazardous materials)	• Choice of location for storage areas must take into account prevailing winds, distances to water bodies, general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary. • Storage areas must be designated, demarcated and fenced if necessary. • Storage areas should be secure so as to minimize the risk of crime. They should also be safe from access by unauthorised persons i.e. children / animals etc. • Fire prevention facilities must be present at all storage facilities. • Storage areas containing chemical substances / materials must be clearly sign posted. • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 110% of any stored volume, and this must be sited away from drainage lines in a site with the approval of the Project Manager. The bund wall must be high enough to contain 110% of the total volume of the stored hazardous material with an additional allocation for potential stormwater events. • These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas and that will not infiltrate into the ground in order to ensure that accidental spillage does not pollute local soil or water resources. • All fuel storage areas must be roofed to avoid creation of dirty stormwater • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals to be used on site. Where possible the available, MSDS's must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.	Holder of the EA/Contractor	Choice of storage areas carefully considered to avoid impact to environment. Correct handling, storage and/or disposal and/or cleanup of all materials to prevent impact to environment. All hazardous substances managed according to approved Method Statement.	Continuous

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME
	• Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures. • An approved waste disposal contractor must be employed to remove and recycle waste oil, if practical. The contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training. • All excess cement and concrete mixes are to be contained on the construction site prior to disposal off site. • All major spills as specified in the contractor emergency response procedure of any materials, chemicals, fuels or other potentially hazardous or pollutant substances must be cleaned immediately and the cause of the spill investigated. Preventative measures must be identified and submitted to the MC and ECO for information. Emergency response procedures to be followed and implemented.			
Construction Camp: Drainage of construction camp	• Surface drainage measures must be established in the Construction Camps so as to prevent o Ponding of water; o Erosion as a result of accelerated runoff; and, o Uncontrolled discharge of polluted runoff.	Holder of the EA/Contractor	Appropriate stormwater structures as informed by the Storm Water Management Plan compiled after engineering design finalised. Input from specialist to be obtained, if necessary. Erosion plan implemented and hydrological measures in place.	Continuous

9.2.2 Environmental Education and Training

This section deals with the issues relative to environmental education and training during the construction phase.

Table 18: Environmental Education and Training

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Environmental Education and Training: Environmental Training	• Ensure that all site personnel have a basic level of environmental awareness training. The Contractor must submit a proposal for this training to the ECO for approval. Translators are to be used where necessary. Topics covered should include: o What is meant by "Environment" o Why the environment needs to be protected and conserved o How construction activities can impact on the environment o What can be done to mitigate against such impacts o Awareness of emergency and spills response provisions o Social responsibility during construction e.g. being considerate to local residents • It is the Contractor's responsibility to provide the site foreman with no less than 1 hour's environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff. • Training should be provided to the staff members in the use of the appropriate fire-fighting equipment. • Use should be made of environmental awareness posters on site. • The need for a "clean site" policy also needs to be explained to the workers. • Staff operating equipment (such as loaders, etc.) shall be adequately trained and sensitized to any potential hazards associated with their tasks.	Contractor	Thorough induction to site.	Continuous
Environmental Education and Training: Monitoring of environmental training	• The Contractor must monitor the performance of construction workers to ensure that the points relayed during their introduction have been properly understood and are being followed. If necessary, the ECO and / or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. Toolbox talks are recommended.	Contractor	Thorough induction to site.	Continuous

9.2.3 Waste Management

This section deals with the issues relative to waste management during the construction phase.

Table 19: Waste Management

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Waste Management: Litter management/ general waste	• Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site. • The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill. • A housekeeping team should be appointed to regularly maintain the litter and rubble situation on the construction site. • If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling. • Where vegetation is cleared and is suitable, chipping and/or mulching can be considered. • Littering by the employees of the Contractor shall not be allowed under any circumstances. • Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly. • Any putrescible waste must be stored in containers that can keep out scavengers such as baboons and birds to prevent the spread of litter. • All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours. • Waste needs to be collected and disposed of at a registered municipal site during and after construction, and written agreement should be provided to authorities where required. • Storm water must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow. • The Contractor shall provide a method statement with regard to waste management.	Contractor The EO shall monitor the neatness of the work sites as well as the Contractor campsite.	All waste managed according to approved Method Statement	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	• A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant. • Under no circumstances may solid waste be burnt on site. • All waste must be removed promptly to ensure that it does not attract vermin or produce odours.			
Waste Management: Hazardous waste	• All waste hazardous materials, if present, must be carefully and appropriately stored, and then disposed of off-site at a licensed landfill site, where practical. • Contaminants to be stored safely to avoid spillage. • Machinery must be properly maintained to keep oil leaks in check • All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction and any spills shall immediately be cleaned up and all affected areas rehabilitated.	Contractor	All waste managed according to approved Method Statement	Continuous
Waste Management: Sanitation	• The Contractor shall install mobile chemical toilets on the site. • The construction of "Long Drop" toilets are forbidden. Rather, portable toilets are to be used. • Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility. • Ablution facilities shall be within proximity from workplaces and not closer than 100m from any natural water bodies or boreholes. There should be enough toilets available to accommodate the workforce (minimum requirement 1: 15 workers). Male and females must be accommodated separately where possible. • Toilets shall be serviced regularly and the ECO shall inspect toilets regularly. • Potable water must be provided for all construction staff.	Contractor	Staff members aware of EMPr requirements and ablutions used and maintained accordingly	Continuous
Waste Management: Remedial Actions	• In the event of an accidental spill or leakage of hazardous substances, such incident(s) must be reported to all relevant authorities, including the Directorate: Pollution and Chemicals Management, in accordance with section 30(5) of the NEMA, 1998 pertaining to the control of incidents. • Depending on the nature and extent of the spill, contaminated soil must be	Contractor	All waste managed according to approved Method Statement	Continuous

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
	either excavated or treated on-site. • Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site. • The precise method of treatment for polluted soil must be identified by a suitable specialist. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil. • If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material. • If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure. • Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use. • Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment and stored in adequate containers until appropriate disposal.			

9.2.4 Avifauna

This section deals with the issues relative to avifauna during the construction phase.

Table 20: Avifauna

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA: DISTURBANCE					
The noise and movement associated with the construction activities at the development	A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the EMPr and should apply good	Contractor and ECO	• Implementation of the EMPr. Oversee activities to ensure that the EMPr is implemented and enforced via site audits and inspections. Report and record any non-compliance. • Ensure that construction personnel are made aware of the impacts relating to off-road	Prevent unnecessary displacement of avifauna by ensuring that contractors are aware of the requirements of the EMPr.	Monthly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
			RHINO AND SUNNYSIDE		
footprint will be a source of disturbance which would lead to the displacement of avifauna from the area	environmental practice during construction. The EMPr must specifically include the following: • No off-road driving; • Maximum use of existing roads, where possible; • Measures to control noise and dust according to latest best practice; • Restricted access to the rest of the property; • Strict application of all recommendations in the ecology specialist report pertaining to the limitation of the footprint.		driving. • Construction access roads must be demarcated clearly. Undertake site inspections to verify. • Monitor the implementation of noise control mechanisms via site inspections and record and report non-compliance. • Ensure that the construction area is demarcated clearly and that construction personnel are made aware of these demarcations. Monitor via site inspections and report non-compliance.		

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA: MORTALITY DUE TO COLLISIONS ON THE INTERNAL 33 KV NETWORK					
Mortality of priority species due to collisions with the medium voltage internal reticulation networks	Eskom approved bird flight diverters should be installed on the full span length of all 33kV overhead lines according to the applicable Eskom Engineering Instruction. These devices must be installed as soon as the conductors are strung.	Contractor and ECO	Bird Flight Diverters must be installed as soon as the conductors are strung.	Prevention of power line collision mortality	Once-off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA: DISTURBANCE					
The noise and movement associated with the construction activities at the development footprint will be a source of disturbance which would lead to the displacement of avifauna from the area	A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the EMPr and should apply good environmental practice during construction. The EMPr must specifically include the following: • No off-road driving; • Maximum use of existing roads, where possible; • Measures to control noise and dust according to latest best practice; • Restricted access to the rest of the property; • Strict application of all recommendations in the ecology specialist report pertaining to the limitation of the footprint.	Contractor and ECO	• Implementation of the EMPr. Oversee activities to ensure that the EMPr is implemented and enforced via site audits and inspections. Report and record any non-compliance. • Ensure that construction personnel are made aware of the impacts relating to off-road driving. • Construction access roads must be demarcated clearly. Undertake site inspections to verify. • Monitor the implementation of noise control mechanisms via site inspections and record and report non-compliance. • Ensure that the construction area is demarcated clearly and that construction personnel are made aware of these demarcations. Monitor via site inspections and report non-compliance.	Prevent unnecessary displacement of avifauna by ensuring that contractors are aware of the requirements of the EMPr.	Monthly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA: MORTALITY DUE TO COLLISIONS ON THE INTERNAL 33 KV NETWORK					
Mortality of priority species due to collisions with the medium voltage internal reticulation networks	Eskom approved bird flight diverters should be installed on the full span length of all 33kV overhead lines according to the applicable Eskom Engineering Instruction. These devices must be installed as soon as the conductors are strung.	Contractor and ECO	Bird Flight Diverters must be installed as soon as the conductors are strung.	Prevention of power line collision mortality	Once-off

9.2.5 Agriculture

This section deals with the issues relative to agriculture during the construction phase.

Table 21: Agriculture

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Protection of soil resources: Erosion	Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.	ECO	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring. Photo evidence required.	That disturbance and existence of hard surfaces causes no erosion on or downstream of the site.	Monthly during construction phase

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Protection of soil resources: Erosion	Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	ECO	Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation. Photo evidence required.	That vegetation clearing does not pose a high erosion risk.	Every 4 months during the construction phase
Protection of soil resources: Topsoil loss	If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface.	ECO	Record GPS positions of all occurrences of below-surface soil disturbance (e.g., excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area. Photo evidence required.	That topsoil loss is minimised	As required, whenever areas are disturbed.

9.2.6 Geotechnical

This section deals with the issues relative to the geotechnical environment during the construction phase.

Table 22: Geotechnical

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Disturbance and removal of rock and soil	Design access roads, platforms and post locations to minimis earthworks and levelling. The design must be based on high resolution ground contour information.	Design Team	Adhere to impact management actions	Reduce the need for large bulk earthworks and reduce the amount of spoiled material quantities.	Once

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
	Correct topsoil and spoil management.	Construction Contractor	Adhere to impact management actions	Stockpile organic rich topsoil during construction. Place topsoil on dead soil typically found at bulk earthworks areas.	Once
Soil Erosion	Avoid development in preferential drainage paths. Temporary berms and drainage channels to divert surface runoff where needed. Landscape and rehabilitate disturbed areas timeously (e.g. regressing). Use designated access and laydown areas only to minimize disturbance to surrounding areas. Vital infrastructure at Sunnyside and Rhino PV developments, such as the substation and battery area, footprints are located within the FACET II area. This area is susceptible to flooding during and immediately after heavy rains. It is advised erosion berms and divergence drains are placed upstream of the site to limit the amount of water flow through these areas.	Design Team / Construction Contractor	Adhere to impact management actions	Reduce the impact and intensity of soil erosion in areas where vegetation and natural drainage channels have been removed. Maintain site areas to reduce run-away rills and gullies	Once Monthly

9.2.7 Socio-economic

This section deals with the issues relative to the socio-economic landscape during the construction phase.

Table 23: Socio-economic

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO					
Expenditure associated with the construction of the proposed development will impact the production of the local economy.	• The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Sub-contracting of local construction companies is encouraged	Contracts manager	Create database of local businesses and employees to engage with	During the construction phase	Once off
Temporary increase in country's GDP due to capital expenditure during the construction period	• The project developer is encouraged to use locally sourced inputs where feasible in order to maximize the benefit to the economy.	Contracts manager	Create database of local businesses and employees to engage with	During the construction phase	Once off
The construction of the proposed development will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).	• Organise local community meetings, where feasible, to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. • Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities. • A CLO is encouraged to be appointed as the contact person between employment opportunities and the community to communicate effectively based on a strategy of the CLO.	Contracts manager	Create database of local businesses and employees to engage with	Before construction commence	Before each construction phase
Employees will develop and enhance skills thereby increasing experience and knowledge.	• In order to maximise the positive impact, the project company is encouraged to provide training courses for employees where feasible to ensure that employees gain as much as possible from the work experience. • Facilitate the transfer of knowledge between experienced employees and the staff. • Perform a skills audit to determine the potential skills that could be sourced in the area.	The person that will be in charge of employment and workers contracts.	Set up apprenticeship programmes to build onto existing skill levels or develop new skills amongst construction workers, especially those from local communities	During the construction phase	Monthly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Local employment will benefit local households and the local area.	The person that will be in charge of employment and workers contracts.	Create database of local businesses and employees to engage with	Before construction commence	Once off
The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Negative impact on sense of place (noise, dust and visual) for farmers where construction activities will take place	• Ensure proper health and safety plans in place during the construction period to ensure safety on and around site during construction • Install screens around the construction site to reduce the visual impact of construction on surrounding properties. • Site watering (or use of appropriate dust suppressant) from when required to reduce dust emitting from the construction site. • Also refer to visual specialist report for mitigation measures.	Visual and noise specialists	The mitigation measures proposed by the visual and noise specialists should be adhered to	Throughout to construction phase	Daily
Farmers might feel that the increase of accessibility will increase theft in the area	• Ensure proper 24/7 security is patrolling the construction sites, as well as controlled access	Safety and Security Officer	Give notice to farm owners before entering the farm	Throughout to construction phase	Daily
Loss of agricultural space	• Construct the solar panels on parts where the least arable land will be affected	Agricultural specialist	The mitigation measures proposed by the agricultural specialist should be adhere to	During the project planning phase	Once off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.	• Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. • Train unemployed local community members with insufficient skills and increase absorption of local labour thereby decreasing in-migration.	Human Resource	Set up a recruitment office in the nearby towns and adhere to strict labour recruitment practices that would reduce the desire of potential job seekers to loiter around the properties in the hope of finding temporary employment. Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of job seekers to the area	Before construction commence	Monthly
An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.	• Provide public transportation service for workers in order to reduce congestion on roads • Partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities • Transportation contractors must adhere to the road rules and regulations • Utilise only designated access routes and entrance/ exits from the site • Implement appropriate signage and road safety measures at entrance/ exit to the site and on site	Traffic engineer, together with local municipalities and road authorities	Adhere to the mitigations of the traffic engineer and relevant road authorities	Throughout to construction phase	Daily

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
SUNNYSIDE					
Expenditure associated with the construction of the proposed development will impact the production of the local economy.	• The project developer is encouraged to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Sub-contracting of local construction companies is encouraged as far as possible for the construction of facilities.	Contracts manager	Create database of local businesses and employees to engage with	During the construction phase	Once off
Temporary increase in country's GDP due to capital expenditure during the construction period	• The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.	Contracts manager	Create database of local businesses and employees to engage with	During the construction phase	Once off
The construction of the proposed development will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).	• Organising of local community meetings, where feasible, is encouraged to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. • Where feasible, it is encouraged to employ locally in order to create maximum benefit for the communities.	Contracts manager	Create database of local businesses and employees to engage with	Before construction commence	Before each construction phase
Employees will develop and enhance skills thereby increasing experience and knowledge.	• In order to maximise the positive impact, it is encouraged that the project company provide training courses for employees where feasible to ensure that employees gain as much as possible from the work experience. • Facilitate the transfer of knowledge between experienced employees and the staff. • Perform a skills audit to determine the potential skills that could be sourced in the area.	The person that will be in charge of employment and workers contracts.	Set up apprenticeship programmes to build onto existing skill levels or develop new skills amongst construction workers, especially those from local communities	During the construction phase	Monthly
Employed individuals will increase the income of their respective households and thereby experience an	• Local employment will benefit local households and the local area.	The person that will be in charge of employment and workers contracts.	Create database of local businesses and employees to engage with	Before construction commence	Once off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
improvement in their standard of living.					
The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Negative impact on sense of place (noise, dust and visual) for farmers where construction activities will take place	• Ensure proper health and safety plans in place during the construction period to ensure safety on and around site during construction • Install screens around the construction site to reduce the visual impact of construction on surrounding properties. • Site watering (or use of appropriate dust suppressant) from when required to reduce dust emitting from the construction site. • Also refer to visual specialist report for mitigation measures.	Visual and noise specialists	The mitigation measures proposed by the visual and noise specialists should be adhered to	Throughout to construction phase	Daily
Farmers might feel that the increase of accessibility will increase theft in the area	• Ensure proper 24/7 security is patrolling the construction sites, as well as controlled access	Safety and Security Officer	Give notice to farm owners before entering the farm	Throughout to construction phase	Daily
Loss of agricultural space	• Construct the solar panels on parts where the least arable land will be affected	Agricultural specialist	The mitigation measures proposed by the agricultural specialist should be adhere to	During the project planning phase	Once off
An impact on the demographics of the area as a result of in-migration in	• Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration.	Human Resource	Set up a recruitment office in the nearby towns and adhere to strict labour recruitment	Before construction commence	Monthly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
response to job opportunities will occur.	• Train unemployed local community members with insufficient skills and increase absorption of local labour thereby decreasing in-migration.		practices that would reduce the desire of potential job seekers to loiter around the properties in the hope of finding temporary employment. Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of job seekers to the area		
An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.	• Provide public transportation service for workers in order to reduce congestion on roads • Partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities • Transportation contractors must adhere to the road rules and regulations • Utilise only designated access routes & entrance/exits from the site • Implement appropriate signage & road safety measures at entrance/exit to the site and on site	Traffic engineer, together with local municipalities and road authorities	Adhere to the mitigations of the traffic engineer and relevant road authorities	Throughout to construction phase	Daily

9.2.8 Heritage

This section deals with the issues relative to the Heritage during the construction phase.

Table 24: Heritage

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO AND SUNNYSIDE					
Impact to significant archaeology	• 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, burials or other categories of heritage resources are found during the proposed development, work must cease in the vicinity of the find and SAHRA must be alerted immediately to determine an appropriate way • The buffers recommended are implemented, i.e., a no-go buffer area of 400 m on Point ID 006, 50 m on Point ID 016, 046 to 050 and 100 m on Point ID 045 (refer to Table 4 of the HIA for more detail). • The HWC Chance Fossil Finds Procedure is implemented for the duration of construction activities. • The buffers recommended are implemented, i.e., a no-go buffer area of 50 m on Point ID 019 to 022 (refer to Table 4 of the HIA for more detail).	ECO	NA	Conservation of significant resources	Daily
Impact to significant palaeontology	• If Palaeontological Heritage is uncovered during surface clearing and excavations ECO should be informed immediately. Fossil discoveries ought to be protected and the ECO/site manager must report to South African Heritage Resources Agency (SAHRA) so that mitigation (recording and collection) can be carried out.	ECO	NA	Conservation of significant resources	Daily

9.2.9 Traffic

This section deals with the issues relative to the Traffic during the construction phase.

Table 25: Traffic

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO AND SUNNYSIDE					
Traffic & Transport related items	• Impact on external traffic	Contractor and developer	N/A	• The delivery of components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.	During construction phase
	• Noise/dust pollution	Contractor		• Dust suppression of gravel roads located within the site boundary, including the main access road to the site and the site access roads, during the construction phase, if required. • Regular maintenance of gravel roads located within the site boundary, including the access roads to the site. • Monitoring and addressing any damage to the section of access routes close to the sites caused by construction vehicles. • The use of mobile batch plants and quarries near the site would decrease the traffic impact on the surrounding road network, if available and feasible. • Staff and general trips should occur outside of peak traffic periods as far as possible. • The preferred route should be surveyed by the developer to identify problem. • Design and maintenance of internal roads. • For upgraded or newly constructed site and access roads, it needs to be ensured that all bellmouths and radii of bends can accommodate the largest construction vehicle.	During and after construction
	• Possible damage to roads in the • vicinity of the site	Contractor			

9.2.10 Terrestrial

This section deals with the issues relative to the Terrestrial during the construction phase.

Table 26: Terrestrial

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO AND SUNNYSIDE					
Habitat destruction, ecosystem fragmentation, habitat degradation	• Vegetation removal to be limited to the smallest possible footprint. • Where possible use existing road infrastructure, additional road infrastructure to minimised (e.g. single road access) • An independent suitably qualified scientist is to be appointed as ECO to oversee works. Should any SCC be found on site these must be relocated to suitable habitat in the nearby environment	Applicant, ECO	Area delineation, monitoring, record keeping.	Minimal vegetation loss. Natural regeneration.	Continuous throughout phase.
Exposure of soil to wind and rain could result in erosion and sedimentation into neighbouring habitat, leading to changes in habitat characteristics and modified habitats. Soil compaction.	• No stormwater management is being implemented on site. Due to the general nature of habitat within the site (low growing karoo scrub), this should be allowed to re-establish following the construction of the solar PV facility. This will allow for the stabilisation of soils. • Bulk of vegetation clearing and earthworks to be completed at the end of the dry season to reduce erosion from water runoff. • In PV areas, compacted soil to be ripped and tilled following construction to allow the regeneration of habitat.	Applicant, ECO	Project scheduling and area maintenance.	Runoff and erosion control. Natural regeneration.	Continuous throughout phase.
Increase in construction personnel to the project site and heavy vehicle movement leading to increased poaching of animals or medicinal plants or destruction of protected species	• An independent suitably qualified scientist to be appointed as ECO to oversee works especially when working in and around the site. • Implementation and enforcement of strict speed limits. • Working at night should be avoided. • Following construction, the site must be cleared of all possible polluting materials and all temporary structures must be removed and responsibly disposed of. • This must include environmental education on the "No Access" and sensitive areas as well as protected species. • No harvesting of plants, plant material, animal or surface water may be allowed.	Applicant, ECO, Contractors	Awareness raising, toolbox talks, “training and induction” related to site specific conditions.	No intentional loss of fauna and flora apart from planned vegetation clearance.	Continuous throughout phase.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Increased noise during construction may affect behaviour and distribution of fauna	[Noise generating activities will only take place during the construction phase] Mitigatory measures include: • Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. • Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. • Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised; • The use of vehicle horns should be minimized where possible. • Restrict construction and operational activity to daylight working hours.	Applicant, ECO, Contractors	Awareness raising, toolbox talks, "training and induction" related to site specific conditions.	Minimise noise generation. Record keeping and monitoring.	Continuous throughout phase.
Activities related to the construction of the solar PV facility can cause the spread and establishment of alien invasive species	An effective Alien Invasive Awareness and Management Programme should be established, focusing on the identification and removal of pervasive invasive species. Further: 1. AIP material should be removed from the site to reduce the potential for re-establishment. 2. Ongoing management as part of the alien invasive management programme. 3. The Alien Invasive Management Plan will need to be applied broadly to the entire footprint to effectively reduce alien invasive species and prevent their recolonisation of cleared areas.	ECO	Invasive Awareness and Management Programme	Monitoring, control, record keeping. Limit spread of AIP.	Continuous throughout phase.
Heavy machinery can result in spillages of harmful substances and potential contamination of soil with hydrocarbons	• Vehicles to be adequately maintained and fitted with drip trays when left standing. • It is advisable that spill kits are available on site.	Applicant, ECO, Contractors	Awareness raising, toolbox talks, "training and induction" related to site specific conditions.	Spill management and area clean-up.	Continuous throughout phase.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Loss of ecological connectivity and faunal movement corridor due to habitat fragmentation from fencing	• It is foreseen that the entire site will be fenced off. This will isolate the site completely and will prohibit faunal movement through the site. • This can be mitigated by allowing for semi-permeable fencing options along the site borders. This will maintain the connectivity between the site and adjacent external habitats.	Applicant	Semi-permeable fencing	Connectivity maintenance and monitoring. Record keeping of faunal species on site.	Continuous throughout Construction and Operation phases

9.2.11 Visual

This section deals with the issues relative to the Visual during the construction phase.

Table 27: Visual

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Visual Quality	• Limit vegetation clearance and the footprint of construction to what is absolutely essential.	Contractor	• Plan which areas require the clearance of vegetation. • Only clear vegetation when works in the area will be undertaken.	• Limited dust generation.	Throughout construction
	• Consolidate the footprint of the construction camp to a functional minimum.		• Ensure that the construction camp is consolidated (in size) during the design phase	• Small construction camp footprint.	
	• Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.		• During very windy conditions cease excavation, handling and transportation of materials which may generate dust.	• No dust generated by activities undertaken during very windy conditions.	
	• Keep stockpiled aggregates and sand covered to minimise dust generation.		• Stockpile all aggregate and sand. • Keep stockpiles covered when not in use.	• No airborne dust entrained from stockpiles.	
	• Keep construction site tidy.		• Implement measures to keep the site tidy.	• No wind-blown litter originating from the site.	

9.2.12 Risk

This section deals with the issues relative to the Risk during the construction phase.

Table 28: Risk

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Environment - emissions to air - dust	• May need to use dampening on roads.	Construction Contractor	• Standard construction practices.	• Limit environmental emission and possible harm.	As needed.
Environment - emissions to water - continuous generation of sewage, kitchen/mess wastewater; possible spills of diesel, solvent, transformer oil; unlikely but conceivable contaminated fire water runoff.	• Normal construction site practices for preventing and containing fuels/paint/oil, etc., spills.	Construction Contractor	• Standard construction procedures.	• Limit environmental emission and possible harm.	Continuous.
	• Bunding under any tanks, curbing under truck offloading areas and sealed surfaces (e.g., concrete) under truck parking area is particularly important.	Design contractor	• Design for construction phase.	• Limit environmental emission and possible harm.	In place before construction.
	• Spill clean-up procedures to be in place before commencing construction.	Construction Contractor	• Operating procedures, training, report spills to management.	• Limit environmental emission and possible harm.	In place before construction.
	• Sewage and any kitchen liquids - containment and suitable treatment/disposal	Construction Contractor	• Standard construction procedures.	• Limit environmental emission and possible harm.	Continuous.
Environment - emissions to earth - continuous generation of kitchen/office waste	• There will be packaging materials that will need to be disposed of after the entire system is connected and commissioned as well as after regular maintenance.	Construction Contractor	• Standard construction practices.	• Limit environmental emission and possible harm.	As needed.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
and regular equipment/materials packaging waste. Environment - waste of resources, e.g., water, power, electrolyte, etc.	• There will need to be waste segregation (e.g., electronic equipment, chemicals) and management on the site.	Construction Contractor	• Standard construction practices.	• Limit environmental emission and possible harm.	Continuous.
Environment - waste of resources, e.g., water, power, electrolyte, etc.	• Water usage to be monitored on site during construction.	Construction Contractor	• Water flow meter - totalizer.	• Regular reporting	Regular
	• Handling protocols to be provided by battery supplier.	Operation manager and Construction Contractor	• Operating procedures, training.	• Limit environmental emission and possible harm.	As needed.
	• End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery unit from day 1.	Operations manager	• Management plan.	• Limit environmental emission and possible harm.	Before construction
	• Spill containment plans to be in place especially for redox flow electrolyte systems.	Operation manager and Construction Contractor	• Operating procedures, training.	• Limit environmental emission and possible harm.	In place before construction

9.3 Operational Phase

9.3.1 Operation and Maintenance

This section deals with the issues relative to operation and maintenance during the operational phase.

Table 29: Operation and Maintenance

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Operation and Maintenance: Maintenance	• All applicable standards, legislation, policies and procedures must be adhered to during operation. • Regular ground inspection of the plants must take place to monitor their status. • Compile and adhere to a procedure for the safe handling of battery cells. • Lithium-ion batteries must have battery management systems (containment, automatic alarms, and shut-off systems) to monitor and protect cells from overcharging or damaging conditions, such as temperature extremes. • Compile an Emergency Response Plan for implementation in the event of a spill or leakage. • Record and report all significant fuel, oil, hydraulic fluid, or electrolyte spills or leaks so that appropriate clean-up measures can be implemented. A copy of these records must be made available to authorities on request throughout the project lifecycle. • Frequent and appropriate disposal of both general and hazardous waste must be undertaken to prevent pollution of soil and groundwater. • Install leak detection monitoring systems where possible. • On-site battery maintenance should only be undertaken on impermeable surfaces with secondary containment measures. Any resulting hazardous substances must be disposed of appropriately. • Provide for suitable emergency and safety signage on site, and demarcation of any areas which may pose a safety risk (including hazardous substances). Emergency numbers for the local police, fire department and Eskom must be placed in a prominent clearly visible area on-site	Holder of the EA	Ensure the conditions of the EA are adhered to. Compliance to all legislative requirements	During operation
Operation and Maintenance: Public awareness	• The emergency preparedness plan must be ready for implementation at all times should an emergency situation arise.	Holder of the EA	Adhere to Emergency Evacuation Plan	During operation

9.3.2 Waste Management

This section deals with the issues relative to waste management during the operation phase.

Table 30: Waste Management

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME
Waste Management: Recycling and litter management	• The site should be kept clear of litter at all times. • Solid waste separation and recycling should take place for the duration of the operational phase for the development at the administration block. • Where vegetation is cleared and is suitable, chipping and/or mulching can be considered. • Any putrescible waste must be stored in containers that can keep out scavengers such as baboons and birds to prevent the spread of litter. • All waste must be removed promptly to ensure that it does not attract vermin or produce odours. • Solid waste should be collected on a regular basis • Waste needs to be collected and disposed of at a registered municipal site during and after construction, and written agreement should be provided to authorities where required.	Holder of EA	All waste managed according to approved Method Statement Compliance to all legislative requirements.	Continuous

9.3.3 Avifauna

This section deals with the issues relative to avifauna during the operation phase.

Table 31: Avifauna

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES /FREQUENCY
RHINO AND SUNNYSIDE					
AVIFAUNA : DISPLACEMENT DUE TO HABITAT TRANSFORMATION					
Total or partial displacement of avifauna due to habitat transformation associated with the vegetation clearance and the presence of the solar PV plants and associated infrastructure.	• Develop a Habitat Restoration Plan (HRP). • Monitor rehabilitation via site audits and site inspections to ensure compliance. • Record and report any non-compliance.	• Project Developer • Facility Environmental Manager • Project Developer and Facility Operational Manager	• Appointment of rehabilitation specialist to develop HRP. • Site inspections to monitor progress of HRP. • Adaptive management to ensure HRP goals are met.	Prevent unnecessary displacement of avifauna by ensuring that the rehabilitation of transformed areas is implemented by an appropriately qualified rehabilitation specialist, according to the recommendations of the botanical specialist study.	• Once-off • Once a year • As and when required

9.3.4 Agriculture

This section deals with the issues relative to the agriculture landscape during the operation phase.

Table 32: Agriculture

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Protection of soil resources: Erosion	Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring.	Facility Environmental Manager / onsite ECO	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	The existence of hard surfaces causes no erosion on or downstream of the site.	Once per month during the dry season and after any rain events during the dry season. Weekly during the wet season.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
			Photo evidence is required.		
Protection of soil resources: Erosion	Facilitate re-vegetation of denuded areas throughout the site	Facility Environmental Manager / onsite ECO	Undertake a periodic site inspection to record the progress of all areas that require re-vegetation. Photo evidence is required.	That denuded areas are re-vegetated to stabilise soil against erosion	Bi-annually

9.3.5 Geotechnical

This section deals with the issues relative to the geotechnical landscape during the operation phase.

Table 33: Geotechnical

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Soil Erosion	Maintain access roads including drainage features. Monitor for erosion and remediate and rehabilitate timeously.	Operations team	Adhere to impact management actions	Maintain site areas to reduce run-away rills and gullies.	Monthly

9.3.6 Socio-economic

This section deals with the issues relative to the socio-economic during the operation phase.

Table 34: Socio-economic

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO					
Expenditure associated with the operations of the proposed development will impact the production of the local economy.	• The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.	Facility manager	Create database of local businesses and employees to engage with	Throughout the operational phase	Once off
Temporary increase in country's GDP due to operational expenditure	• Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.	Facility manager	Create database of local businesses and employees to engage with	Throughout the operational phase	Once off
The operation of the proposed development will positively impact the community and beyond by creating a number of job opportunities.	• Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.	Facility manager	The person that will be in charge of employment and workers contracts.	Throughout the operational phase	Quarterly
Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Employing locally will increase benefit to local households and the local area	Human Resources	Create database of local businesses and employees to engage with	Throughout the operational phase	Throughout the operational phase
The investment in the facility will generate revenue for the government during the construction period through a combination of	• **N/A**	**N/A**	**N/A**	**N/A**	**N/A**

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
personal income tax, VAT, companies' tax etc.					
The landowners will receive monthly/ annual compensation for the solar panels situated on their farms, this will help to increase the landowner's revenue to ensure sustainability on the farms.	• **N/A**	**N/A**	**N/A**	**N/A**	**N/A**
The additional electricity that will be generated will increase electricity supply in the country.	• **N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Negative impact on sense of place (noise and visual).	• Refer to visual specialist report for mitigation measures.				
Loss of agricultural space	• Construct the solar panels on parts where the least arable land will be affected	Agricultural specialist	The mitigation measures proposed by the agricultural specialist should be adhere to	During the project planning phase	Once off
Expenditure associated with the operations of the proposed development will impact the production of the local economy.	• The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.	Facility manager	Create database of local businesses and employees to engage with	Throughout the operational phase	Once off
SUNNYSIDE					
Expenditure associated with the operations of the proposed development	• The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy.	Facility manager	Create database of local businesses and employees to engage with	Throughout the operational phase	Once off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
will impact the production of the local economy.	• Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.				
Temporary increase in country's GDP due to operational expenditure	• Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.	Facility manager	Create database of local businesses and employees to engage with	Throughout the operational phase	Once off
The operation of the proposed development will positively impact the community and beyond by creating a number of job opportunities.	• Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.	Facility manager	The person that will be in charge of employment and workers contracts.	Throughout the operational phase	Quarterly
Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Employing locally will increase benefit to local households and the local area	Human Resources	Create database of local businesses and employees to engage with	Throughout the operational phase	Throughout the operational phase
The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.	• **N/A**	**N/A**	**N/A**	**N/A**	**N/A**
The landowners will receive monthly/ annual compensation for the solar panels situated on their	• **N/A**	**N/A**	**N/A**	**N/A**	**N/A**

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
farms, this will help to increase the landowner's revenue to ensure sustainability on the farms.					
The additional electricity that will be generated will increase electricity supply in the country.	• **N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Negative impact on sense of place (noise and visual).	• Refer to visual specialist report for mitigation measures.				
Loss of agricultural space	• Construct the solar panels on parts where the least arable land will be affected	Agricultural specialist	The mitigation measures proposed by the agricultural specialist should be adhere to	During the project planning phase	Once off

9.3.7 Terrestrial

This section deals with the issues relative to the Terrestrial during the operational phase.

Table 35: Terrestrial

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO AND SUNNYSIDE					
Washing of panels could contribute to the erosion and sedimentation of neighbouring habitats	• Unlikely to have significant impact as the volume of water required, that will runoff, will likely quickly seep into soil and/evaporate. • Frequency of panel washing to be minimised.	ECO, Operator	Site management and monitoring.	Monitoring, control, record keeping.	Planning and implementation phases.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Operation of solar PV facility, the reflective surfaces and operational light pollution may cause disorientation affecting the behaviour and distribution of fauna	• Light pollution from safety and security lighting infrastructure creates glare off panels and increased light pollution, disrupting nocturnal species' behaviour and natural rhythms, such as migration patterns or hunting behaviour. • The need for artificial lighting should be minimised. • Should it be necessary, lighting at the solar PV facility should have appropriate shielding or make use of downward directional fixtures with low intensity lighting. • Illumination of adjacent habitats should be avoided.	ECO, Operator	Site management and monitoring.	Monitoring, control, record keeping.	Planning and implementation phases.
Activities related to the maintenance of the solar PV facility can cause the spread and establishment of alien invasive species	• An effective Alien Invasive Awareness and Management Programme should be established, focusing on the identification and removal of pervasive invasive species. Further: o AIP material should be removed from the site to reduce the potential for re-establishment. o Ongoing management as part of the alien invasive management programme. o The Alien Invasive Management Plan will need to be applied broadly to the entire footprint to effectively reduce alien invasive species and prevent their recolonisation of cleared areas.	ECO	Invasive Awareness and Management Programme.	Monitoring, control, record keeping. Limit spread of AIP.	Continuous throughout phase.
Heavy machinery can result in spillages of harmful substances and potential contamination of soil with hydrocarbons	• Vehicles to be adequately maintained and fitted with drip trays when left standing. • It is advisable that spill kits are available on site.	Applicant, ECO, Contractors	Awareness raising, toolbox talks, "training and induction" related to site specific conditions.	Spill management and area clean-up.	Continuous throughout phase.

9.3.8 Visual

This section deals with the issues relative to the Visual during the operational phase.

Table 36: Visual

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
RHINO AND SUNNYSIDE					
Altered Sense of Place and Visual Intrusion	• Install the powerlines underground, where possible.	Developer	• Incorporate underground powerlines in the design.	• Reduced visual clutter interrupting views.	• On completion of construction activities. • Throughout operation.
	• Fence the perimeter of the site with green or black fencing.		• Install a perimeter fence.	• The site is screened by the fence.	
	• Ensure that the roof colour of the proposed buildings blends into the landscape.		• Incorporate colour requirements in the design.	• The roof visibly blends into the landscape.	
Altered Visual Quality	• Reduce the height of lighting masts to a workable minimum.	Developer and Contractor	• Incorporate lighting requirements in the design.	• Limited light pollution caused by the SEF.	• Once construction activities have concluded. • Throughout operation
	• Direct lighting inwards and downwards to limit light pollution.				
SUNNYSIDE					
Visual discomfort and impaired visibility	• Retain vegetation and copses of trees between PV array and the grave road.	Developer	• Retain vegetation	• Screen the PV array.	Throughout operation.

9.3.9 Risk

This section deals with the issues relative to the Risk during the construction phase.

Table 37: Risk

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Environment - emissions to air - continuous hydrogen emission from redox flow batteries, continuous cooling tower blow down (if in design), continuous kitchen. Mess sewage waste, regular laboratory waste (if in design), periodic maintenance waste (oils, refrigerant), possible spills of electrolyte, refrigerant and conceivable contaminated fire water runoff .	• Hydrogen vents elevated above the battery for good dispersion. Flashback arrestors in the hydrogen vents in areas with high level of lightning in summer. During commissioning confirmation that levels of hydrogen at the equipment and human activity area of the facility are suitably low.	Operations manager	LEL detection	Hydrogen levels not within flammable range in areas where there is equipment and where persons may be working.	Once off at start
	• Especially after any warning alarms have gone off, but possibly even normally the container could be treated as entering a confined space and similar procedures could be in place, e.g., do not enter alone, gas testing prior to entering, ensure adequate ventilation	Operations manager	Safe work procedures	Limit environmental emission and possible harm.	In place before operation - used as needed
Environment - emissions to water - continuous cooling tower blow down (if in design), continuous kitchen, mess and sewage waste, regular laboratory waste (if in design), periodic electrolyte replacement (purging)	• Bunding under any outdoors tanks, curbing under truck offloading areas and sealed surfaces (e.g., concrete) under truck parking area is particularly important.	Design contractor	Design for operations	Limit environmental emission and possible harm.	In place before operations
	• Sewage and any kitchen liquids - containment and suitable treatment/disposal.	Operations manager	Staff training and awareness	Limit environmental emission and possible harm.	Continuous.
	• Procedures for dealing with damaged/leaking equipment as well as clean-up of spills.	Operations manager	Operating procedures, training, report spills to management	Limit environmental emission and possible harm.	In place before operation - used as needed.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
and maintenance waste (oils, refrigerant), possible spills of electrolyte from redox flow batteries, refrigerant, transformer oils, diesel from vehicles and conceivable contaminated fire water run-off .	• Normal site practices for preventing and containing diesel/paint, etc., spills.	Operations manager	Operating procedures, training, report spills to management	Limit environmental emission and possible harm.	In place before operation - used as needed.
	• Waste management plan to be in place, e.g., liquid waste treatment or suitable removal and disposal will be provided.	Operations manager	Staff training and awareness	Provides suitable waste disposal facilities.	Continuous.
	• Spill clean-up procedures to be in place before bringing container on site, including spill kits – non-combustible materials, HAZMAT disposal.	Operations manager	Operating procedures, training, report spills to management	Limit environmental emission and possible harm.	In place before operation - used as needed.
	• Redox flow battery systems, electrolyte areas fully bunded to 110% of largest tank, or more.	Design contractor	Design for operations	Limit environmental emission and possible harm.	In place before operations.
	• Process controls in place to prevent contamination and deterioration of redox flow electrolyte leading to excessive purging.	Operations manager	Operating procedures, training	Limit environmental emission and possible harm.	In place before operation - used as needed.
	• Ensure proposed locations of the BESS facilities, particularly those with liquid electrolyte such as redox flow batteries, are a suitable distance from the closest water course. In the event of a major spill if this is too close it may not allow time for mitigation to be taken. Adequate secondary and possibly tertiary containment systems may then be needed on site	Design contractor	Design for operations	Limit environmental emission and possible harm.	In place before construction.
	• The National Environment Management Act (NEMA) has a list of substances with Reportable spill Quantities, ensure compliance with this.	Operations manager	Management procedures	Inform authorities of impact on the environment	In place before operation - used as needed.
Environment - emissions to earth -	• Implement waste segregation (e.g., electronic equipment, chemicals, domestic) and management on the site.	Operations manager	Staff training and awareness	Provides suitable waste disposal facilities.	Continuous.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
continuous generation of kitchen/office waste, regular equipment/materials maintenance waste periodic electronic equipment waste.					
Environment - waste of resources, e.g., water, power, etc.	• Water usage to be monitored on site.	Operations manager	Water flow meter - totalizer	Regular reporting	Regular.
	• Handling protocols to be provided by supplier of batteries.	Operation manager	Operating procedures, training	Limit environmental emission and possible harm.	As needed.
	• Water management plan and spill containment plans to be in place.	Operations manager	Operating procedures, training	Limit environmental emission and possible harm.	Continuous.
	• Investigate End of Life plan for redox flow battery electrolyte - reuse / recovery / reconditioning.	Operations manager	Management plan	Limit environmental emission and possible harm.	In place before construction.
	• Investigate end of Life plan for solid state batteries - reuse / recovery / reconditioning.	Operations manager	Management plan	Limit environmental emission and possible harm.	In place before construction.
	• Similarly, for decommissioned containers – reuse / recovery / repurpose.	Operations manager	Management plan	Limit environmental emission and possible harm.	In place before construction.

9.4 Decommissioning Phase

9.4.1 Construction Site Decommissioning

This section deals with the issues relative to construction site decommissioning during the operational phase.

Table 38: Construction Site Decommissioning

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES
Construction Site Decommissioning: Removal of equipment	• All structures comprising the construction camp are to be removed from site. • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc., and these shall be cleaned up. • All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the re-vegetation that forms part of this document.	Holder of EA/ Contractor	Compliance to all legislative requirements. Ensure the EMPr is adhered to.	During decommissioning
Construction Site Decommissioning: Temporary services	• The Contractor must arrange the cancellation of all temporary services. • Temporary roads must be closed and access across these, blocked. • All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.	Holder of EA/ Contractor	Compliance to all legislative requirements. Ensure the EMPr is adhered to.	During decommissioning
Construction Site Decommissioning: Associated infrastructure	• Surfaces are to be checked for waste products from activities such as concreting or asphalting and cleared in a manner approved by the Engineer. • All surfaces hardened due to construction activities are to be ripped and imported material thereon removed. • All rubble is to be removed from the site to an approved disposal site as approved by the Engineer. Burying of rubble on site is prohibited. • The site is to be cleared of all litter. • The Contractor is to check that all watercourses are free from building rubble, spoil materials and waste materials. • Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer. • All residual stockpiles must be removed to spoil or spread on site as directed by the Engineer. • All leftover building materials must be returned to the depot or removed from the site. • The Contractor must repair any damage that the construction works has caused to neighbouring properties, specifically, but not limited to, damage caused by poor storm water management.	Holder of EA/ Contractor	All waste managed according to approved Method Statement	During decommissioning

9.4.2 On-going Stakeholder involvement

This is the process that is recommended when the proposed solar farms are decommissioned.

Table 39: On-going Stakeholder involvement

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT ACTIONS	TIMEFRAME
Ongoing Stakeholder Involvement	• Community to be notified, as culturally appropriate, timeously of the planned decommissioning, e.g.: o Proposed decommissioning start date; and o Process to be followed. • Recommend that a meeting with community leader(s) be held before decommissioning commence to inform them: o What activities will take place during the decommissioning phase. o How these activities will impact upon the communities and/or their properties. o Regarding the timeframes of scheduled activities • Regular interaction between the client and community leader(s) during the decommissioning phase. • A reporting office/ channel to be established should community members experience problems with contractors/ sub-contractors during the decommissioning phase. • A register to be kept of problems reported by community members and the steps taken to address / resolve it.	Holder of the EA	Clear communication channels maintained	During decommissioning

9.4.3 Terrestrial Biodiversity

This section deals with the issues relative to waste management during the decommissioning phase.

Table 40: Waste Management

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT ACTIONS	TIMEFRAME
Terrestrial biodiversity	• It is recommended that a rehabilitation plan be developed 5 years prior to closure, as the current environment at time of closure will need to be assessed	Holder of the EA	Implement the Rehabilitation Plan	During decommissioning

9.4.4 Waste Management

This section deals with the issues relative to waste management during the decommissioning phase.

Table 41: Waste Management

IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	IMPACT MANAGEMENT ACTIONS	TIMEFRAME
Waste Management	• All decommissioned equipment must be removed from site and disposed of at a registered land fill. Records of disposal must be kept. • Any putrescible waste must be stored in containers that can keep out scavengers such as baboons and birds to prevent the spread of litter. • Solar panels must be returned to the manufacturer or relevant recycling agent to be recycled.	Holder of the EA	All waste managed according to approved Method Statement	During decommissioning

9.4.5 Agriculture

This section deals with the issues relative to the agricultural landscape during the decommissioning phase.

Table 42: Agriculture

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Protection of soil resources: Erosion	Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.	ECO	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	That disturbance and existence of hard surfaces causes no erosion on or downstream of the site.	Every 2 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Protection of soil resources: Erosion	Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	ECO	Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	That vegetation clearing does not pose a high erosion risk.	Every 4 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.
Protection of soil resources: Topsoil loss	If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface.	ECO	Record GPS positions of all occurrences of below-surface soil disturbance (e.g., excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area.	That topsoil loss is minimised	As required, whenever areas are disturbed.

9.4.6 Geotechnical

This section deals with issues relative to the geotechnical landscape during the decommissioning phase.

Table 43: Geotechnical

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO AND SUNNYSIDE					
Disturbance and removal of rock and soil	Restore natural site topography. Landscape and rehabilitate access roads and disturbed areas timeously (e.g. egressing).	Operations Team	Adhere to impact management actions	Reduce ponding of water and soil erosion by reinstating natural drainage channels.	Yearly

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Soil Erosion	Temporary berms and drainage channels to divert surface runoff where needed. Restore natural site topography. Use designated access and laydown areas only to minimize disturbance to surrounding areas.	Operations Team	Adhere to impact management actions	Reduce ponding of water and soil erosion by reinstating natural drainage channels. Maintain remaining access roads.	Yearly

9.4.7 Socio-economic

This section deals with issues relative to the socio-economic during the decommissioning phase.

Table 44: Socio-economic

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
RHINO					
Expenditure associated with the decommissioning of the proposed development will impact the production of the local economy.	• The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
Temporary increase in country's GDP due to capital expenditure during the decommissioning period	• The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
The decommissioning of the proposed development will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).	• Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Local employment will benefit local households and the local area.	Human Resources	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
After decommissioning, the land can be restored and repurposed for other uses, potentially increasing its economic value for activities like agriculture, real estate development, or recreation.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SEF's contribute to local tax revenues. Decommissioning can lead to a reduction in tax income for municipalities and regions, impacting their ability to fund public services.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Decommissioning can be expensive, and the financial responsibility often falls on the facility owner or local government. These costs can strain budgets and resources.	• Recommissioning a solar facility is essential to harness sustainable energy sources, reduce carbon emissions, and ensure long-term environmental and economic benefits, making it a sensible choice over decommissioning.	Project Owner	Project owners should consider applying for the necessary licencing to extend operations	Before Decommissioning phase commence	Once Off
Decommissioning means the loss of renewable energy production, which can affect the availability of energy resources in the region.	• Recommissioning a solar facility is essential to harness sustainable energy sources, reduce carbon emissions, and ensure long-term environmental and economic benefits, making it a sensible choice over decommissioning.	Project Owner	Project owners should consider applying for the necessary licencing to extend operations	Before Decommissioning phase commence	Once Off
Effective waste management during the decommissioning phase of a solar farm is crucial for minimizing environmental impact, ensuring safe	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
disposal of materials, and complying with regulations; however, it is costly due to specialized handling requirements and proper disposal methods.					
Expenditure associated with the decommissioning of the proposed development will impact the production of the local economy.	• The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
SUNNYSIDE					
Expenditure associated with the decommissioning of the proposed development will impact the production of the local economy.	• The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
Temporary increase in country's GDP due to capital expenditure during the decommissioning period	• The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
The decommissioning of the proposed development will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).	• Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.	Contracts manager	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off
Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Local employment will benefit local households and the local area.	Human Resources	Create database of local businesses and employees to engage with	Before Decommissioning phase commence	Once Off

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAMES/ FREQUENCY
After decommissioning, the land can be restored and repurposed for other uses, potentially increasing its economic value for activities like agriculture, real estate development, or recreation.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SEF's contribute to local tax revenues. Decommissioning can lead to a reduction in tax income for municipalities and regions, impacting their ability to fund public services.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Decommissioning can be expensive, and the financial responsibility often falls on the facility owner or local government. These costs can strain budgets and resources.	• Recommissioning a solar facility is essential to harness sustainable energy sources, reduce carbon emissions, and ensure long-term environmental and economic benefits, making it a sensible choice over decommissioning.	Project Owner	Project owners should consider applying for the necessary licencing to extend operations	Before Decommissioning phase commence	Once Off
Decommissioning means the loss of renewable energy production, which can affect the availability of energy resources in the region.	• Recommissioning a solar facility is essential to harness sustainable energy sources, reduce carbon emissions, and ensure long-term environmental and economic benefits, making it a sensible choice over decommissioning.	Project Owner	Project owners should consider applying for the necessary licencing to extend operations	Before Decommissioning phase commence	Once Off
Effective waste management during the decommissioning phase of a solar farm is crucial for minimizing environmental impact, ensuring safe disposal of materials, and complying with regulations; however, it is costly due to specialized handling requirements and proper disposal methods.	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

9.4.8 Traffic

This section deals with the issues relative to the Traffic during the Decommissioning phase.

Table 45: Traffic

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Traffic & Transport related items	Possible damage to roads in the vicinity of the site.	Contractor	N/A	• The delivery of components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods. • Dust suppression of gravel roads located within the site boundary, including the main access road to the site and the site access roads, during the construction phase, if required. • Regular maintenance of gravel roads located within the site boundary, including the access roads to the site. • Monitoring and addressing any damage to the section of access routes close to the sites caused by construction vehicles. • The use of mobile batch plants and quarries near the site would decrease the traffic impact on the surrounding road network, if available and feasible. • Staff and general trips should occur outside of peak traffic periods as far as possible. • The preferred route should be surveyed by the developer to identify problem. • Design and maintenance of internal roads. • For upgraded or newly constructed site and access roads, it needs to be ensured that all bellmouths and radii of bends can accommodate the largest construction vehicle.	During and after construction

9.4.9 Visual

This section deals with the issues relative to the Visual during the decommissioning phase.

Table 46: Visual

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Visual Quality	• Limit vegetation clearance and the footprint of construction to what is absolutely essential.	Contractor	• Plan which areas require the clearance of vegetation. • Only clear vegetation when works in the area will be undertaken.	• Limited dust generation.	Throughout construction
	• Consolidate the footprint of the construction camp to a functional minimum.		• Ensure that the construction camp is consolidated (in size) during the design phase	• Small construction camp footprint.	
	• Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.		• During very windy conditions cease excavation, handling and transportation of materials which may generate dust.	• No dust generated by activities undertaken during very windy conditions.	
	• Keep stockpiled aggregates and sand covered to minimise dust generation.		• Stockpile all aggregate and sand. • Keep stockpiles covered when not in use.	• No airborne dust entrained from stockpiles.	
	• Keep construction site tidy.		• Implement measures to keep the site tidy.	• No wind-blown litter originating from the site.	

9.4.10 Risk

This section deals with the issues relative to the Risk during the construction phase.

Table 47: Risk

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
Environment - emissions to air - dust.	• May need to use dampening on roads, etc., as per normal construction practices.	Decommissioning contractor	• Standard construction practices.	• Limit environmental emission and possible harm.	As needed.
Environment - emissions to water - continuous cooling tower blow down (if in design), continuous kitchen, mess and sewage waste, regular laboratory waste (if in design), periodic electrolyte replacement (purging) and maintenance waste (oils, refrigerant), possible spills of electrolyte from redox flow batteries, refrigerant, transformer oils, diesel from vehicles and conceivable contaminated fire water run off	• Normal construction site practices for preventing and containing fuels/paint/oil, etc., spills.	Decommissioning contractor	• Standard construction procedures.	• Limit environmental emission and possible harm.	Continuous.
	• Bunding under any tanks, curbing under truck offloading areas and sealed surfaces (e.g., concrete) under truck parking area is particularly important.	Decommissioning contractor	• Design for construction phase	• Limit environmental emission and possible harm.	In place before construction.
	• Spill clean-up procedures to be in place before commencing decommissioning.	Decommissioning contractor	• Operating procedures, training, report spills to management	• Limit environmental emission and possible harm.	In place before construction.
	• Sewage and any kitchen liquids - containment and suitable treatment/disposal	Decommissioning contractor	• Standard construction procedures.	• Limit environmental emission and possible harm.	Continuous.
Environment - emissions to earth - continuous generation of kitchen/office	• End of Life shutdown procedure including a Risk Assessment of the specific activities involved.	Decommissioning contractor and operations manager	• Management plan	• Limit environmental emission and possible harm.	Before decommissioning.

ASPECT/ IMPACT	IMPACT MANAGEMENT ACTIONS	RESPONSIBILITY	METHOD	IMPACT MANAGEMENT OUTCOMES	TIMEFRAME/ FREQUENCY
waste, regular equipment/materials maintenance waste, electronic equipment waste, battery components, battery containers.	• Where possible re-purpose the redox flow electrolyte / solid-state batteries / containers and equipment with associated environmental impact considered.	Decommissioning contractor and operations manager	• Management plan	• Limit environmental emission and possible harm.	Before decommissioning.
	• Disposal according to local regulations and other directives such as the European Batteries Directive.	Decommissioning contractor and operations manager	• Management plan	• Limit environmental emission and possible harm.	Before decommissioning.
	• End of life, which is affected by temperature and time, cycles etc, should be predefined and the monitoring should be in place to determine if it has been reached.	Operations manager	• Operating procedures, training	• Limit environmental emission and possible harm.	In place before operation - used as needed.
Environment - waste of resources, e.g., water, power, etc.	• Water usage to be monitored on site during construction.	Decommissioning contractor	• Water flow meter - totalizer	• Regular reporting	Regular.
	• Handling protocols to be provided by battery supplier.	Decommissioning contractor	• Operating procedures, training	• Limit environmental emission and possible harm.	As needed.
	• End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery unit from day 1.	Operations manager	• Management plan	• Limit environmental emission and possible harm.	Before construction.
	• Spill containment plans to be in place especially for redox flow electrolyte systems.	Decommissioning contractor	• Operating procedures, training	• Limit environmental emission and possible harm.	In place before construction.

10. AMENDMENTS TO THE EMPR

The ECO has the right to request (in writing) a method statement to be compiled by the contractor in cases where the Construction EMPr may not adequately address the issue or nature of the activity/site warrants the need thereof. The method statement must be approved in writing by the ECO prior to carrying out the activity.

Any major issues not covered in the EMPr as submitted as well as any layout changes, will be addressed as an addendum to the EMPr and must be submitted for approval prior to implementation.

Authorised officials of the Department reserve the right to review the approved EMPr during the construction and operational phases of the above-mentioned activity and amend/add any condition as it is deemed necessary. Authorised officials also reserve the right to inspect the project during both construction and operational phase of development.

11. ENVIRONMENTAL AWARENESS PLAN

Appendix 4 of GN R326 EIA Regulations 2014 (as amended) requires that and Environmental Awareness Plan describes the manner in which "*the applicant intends to inform his or her employees of any environmental risk which may result from their work; and risks must be dealt with in order to avoid pollution or the degradation of the environment*". In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

This Environmental Awareness Plan is intended to create the required awareness and culture with personnel and contractor's / service providers on environmental safety and health issues associated with the development activities.

11.1 Policy on Environmental Awareness

This Environmental Awareness Plan must serve as the basis for the induction of all new employees (as well as contractors depending on the nature of their work on site) on matters as described herein and read in conjunction with the EMPr. The Plan will also be used to home awareness of all employees on a continuous basis.

Specific environmental awareness performance criteria will also form part of the job descriptions of employees, to ensure diligence and full responsibility at all levels of the organisational work force.

11.2 Implementation of Environmental Awareness

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout the project's duration. This will ensure that environmental accidents are minimised and environmental compliance maximised.

Environmental awareness will be fostered in the following manner:

- Induction course for all workers on site, before commencing work on site;
- Refresher courses as and when required;
- Daily toolbox talks with all workers on the site at the start of each day, where workers can be alerted

to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working; and
- Displaying of information posters and other environmental awareness material at the general assembly points.

11.3 Training and awareness

The main contractor is to take responsibility for the management of their staff and subcontractors on the project site during the construction phase and supervise them closely at all times. The onus is on the contractor to make sure that all their staff and subcontractors fully comprehend the contents of the EMPr. The contractor must organise environmental awareness training programmes, which should be targeted at the two levels of employee: management and labour.

11.4 Training of construction workers

All construction staff must receive basic training in environmental awareness, including the storage and handling of hazardous substances, minimisation of disturbance to sensitive areas, management of waste, and prevention of water pollution. They must be informed of how to recognise historical / archaeological artefacts that may be uncovered. They must also be apprised of the EMPr's requirements. Environmental awareness training programmes need to be formulated for these employee levels and must comprise:

- A record of all names, positions and duties of staff to be trained;
- A framework for the training programmes;
- A summarised version of the training course(s); and
- An agenda for the delivery of the training courses.

Such programmes will set out the training requirements, which need to be conducted prior to any construction works occurring and will include:

- Acceptable behaviour with regard to flora and fauna;
- Management and minimising of waste, including waste separation;
- Maintenance of equipment to prevent the accidental discharge or spill of fuel, oil, lubricants, cement, mortar and other chemicals;
- Responsible handling of chemicals and spills;
- Environmental emergency procedures and incident reporting; and
- General code of conduct towards I&APs.

12. CONCLUSION

The environmental and social impacts of the project were identified through the four project phases (pre-construction, construction, operation and decommissioning). The following section briefly describes some of the major impacts and proposed mitigation measures within each of the project phases.

12.1 Pre-Construction Phase

The first site activities before mobilization of equipment will be a survey, required for final design of solar farm foundations. There will be negative impacts on land associated with the construction of camps

(temporary loss) and storage of construction materials, and foundations for the buildings (permanent loss). Expectations of improvement in livelihood among locals should be addressed through public participation. Construction contracts will include environmental monitoring and management procedures and requirements. These must be in place prior to the commencement of any construction activities.

12.2 Construction Phase

This phase of the activity will have both positive and negative impacts. The positive impacts are employment opportunities offered to the construction workers and any other labourer who will be hired to provide their services during the construction phase. The negative impacts would include wastes generated, accidents, air, dust and noise pollution, vegetation clearance, soil erosion, socio-environmental issues, loss of vegetation, and compaction of soil. Most of the negative impacts are minor and temporary and the significance of the impacts can be greatly reduced by the implementation of mitigation measures, which are outlined in this EMPr. The contractor shall ensure that all staff have adequate protective clothing and are adequately trained.

12.3 Operational Phase

The proposed project will have minimal negative effects which mainly relates to loss of aesthetic value and habitat. Most of the negative impacts are minor and the significance of the impacts can be greatly reduced by the implementation of mitigation measures, which are outlined in this EMPr.

12.4 Decommissioning Phase

As with any project, the facilities used in this project will have a lifetime after which they may no longer be cost effective to continue with operation. At that time, the project would be decommissioned, and the existing equipment removed.

Potential environmental impacts caused during decommissioning are those, which will be mitigated as provided by the Environmental Management Programme. These include: noise and emissions to the surrounding environment, removal of hazardous waste and substances, fire, oil spills, wastes and public safety. The disposal of materials from the decommissioned plant is not viewed as high risk. Much of the material would be recyclable (steel structures and turbine engines etc.) or inert (concrete foundations, etc.). These materials would, however, need to be disposed of at a formal waste disposal or recycling centre.

Based on the above information, it is unlikely that the Project will have significant adverse social and environmental impacts. Most adverse impacts will be of a temporary nature during the construction phase and can be managed to acceptable levels with implementation of the recommended mitigation measures for the Project such that the overall benefits from the Project will greatly outweigh the few adverse impacts.

All the negative impacts could be easily mitigated and will either be moderate or less in rating. Generally, the proposed solar farm will result in appreciable benefits to the people in the project area of influence and bring opportunities for development to the country.

Appendix A:

Curriculum Vitae

Appendix B:

Environmental Incidents

Environmental Incident Log

ENVIRONMENTAL INCIDENT LOG				
Date	Env. Condition	Comments *(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)*	Corrective Action Taken (*Give details and attach documentation as far as possible)*	*Signature*

Appendix C:

Complaints Record Sheet

Complaints Record Sheet

COMPLAINTS RECORD SHEET	File Ref: Page …. of ….	DATE: ……
COMPLAINT RAISED BY:		
CAPACITY OF COMPLAINANT:		
COMPLAINT RECORDED BY:		
COMPLAINT:		
PROPOSED REMEDIAL ACTION:		
EO: _____ Date: _____		
NOTES BY ECO:		
EO: _____ Date: _____ Site Manager: _____ Date: _____		

Appendix D:

Summary of Specialist Findings and Recommendations

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
Aquatic / Freshwater	The Compliance Statement notes that the site's indicates that the aquatic ecological footprint will have a localised and minimal impact, preserving the sensitive surroundings and water bodies associated with the broader project. The Platdoring River exhibits medium ecological sensitivity, and the L11F catchment has a low ecological importance sensitivity, with few sensitive aquatic elements near the study area. Despite being recognised as a vital ESA River system, the Platdoring River's low priority status is justified by continuous dry conditions and a persistent zero flow status. The aquatic compliance statement aims to minimise and mitigate potential impacts, with the overall effect on aquatic features deemed negligible despite ESA1 classification. • Should the project progress, engagement with the DWS for the necessary water use authorisation application processes, such as a GA or WUL, will be required. The report recommends that the low importance and sensitivity of wetlands, rivers, and drainage lines (aquatic features) be considered by the DWS in deciding whether a GA or WUL is necessary in terms of Section 21 of the NWA.	The Compliance Statement notes that the site's indicates that the aquatic ecological footprint will have a localised and minimal impact, preserving the sensitive surroundings and water bodies associated with the broader project. The Platdoring River exhibits medium ecological sensitivity, and the L11F catchment has a low ecological importance sensitivity, with few sensitive aquatic elements near the study area. Despite being recognised as a vital ESA River system, the Platdoring River's low priority status is justified by continuous dry conditions and a persistent zero flow status. The aquatic compliance statement aims to minimise and mitigate potential impacts, with the overall effect on aquatic features deemed negligible despite ESA1 classification. Should the project progress, engagement with the DWS for the necessary water use authorisation application processes, such as a GA or WUL, will be required. The report recommends that the low importance and sensitivity of wetlands, rivers, and drainage lines (aquatic features) be considered by the DWS in deciding whether a GA or WUL is necessary in terms of Section 21 of the NWA.
Terrestrial Biodiversity including Animal and Plant Species	The desktop study revealed that very few species of conservational importance are found within the quarter degree grid cells encompassing the project area. However, of these species, none were recorded during site investigations nor are they expected to occur in areas directly related to the proposed project sites (with the exception perhaps of *Chersobius boulengeri*). CBAs are located north and west of the Rhino SEF site along the seasonal watercourse,	The desktop study revealed that very few species of conservational importance are found within the quarter degree grid cells encompassing the project area. However, of these species, none were recorded during site investigations nor are they expected to occur in areas directly related to the proposed project sites (with the exception perhaps of *Chersobius boulengeri*). CBAs are located north and west of the Rhino SEF site along the seasonal watercourse,

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	Platdoring river. The small area of the CBA, which infringes the site to the west, was confirmed not to be of sensitive nature with the main drainage line in the center of the CBA being the driving feature from which the CBA has been delineated. This CBA will not be affected by the development as it infringes a mere 20 m into the site. The northern CBAs will also remain unaffected. It is also noteworthy that due to the low levels of transformation in the area, the irreplaceability of these CBAs is likely low. All major and minor drainage lines within the Rhino and Sunnyside solar PV areas are mapped as functional natural or near-natural ESAs. The ESAs are generally small and represent buffered areas around drainage features. This includes minor washes, the drainage areas largely devoid of riparian vegetation. It is unlikely that development would be able to avoid all ESAs and some habitat loss is inevitable. The minor drainage features in particular do not represent broad-scale ecological corridors and are unlikely to impact ecological functionality should development occur. Development will likely impinge on ESAs, however, these minor drainage lines are not particularly sensitive and the impacts would likely be low. The sites in question have been impacted by past and present anthropogenic activities, predominantly sheep farming, and can no longer be classified as pristine environments. This is evidenced from the grazing pressure and the presence of invasive species within the site. • Should development infringe on the 500 m regulated area surrounding any NFEPA identified wetland areas, or any specialist delineated wetlands, the applicant will need to approach the DWS and consider the relevant application processes for either a GA or a WUL. • It is recommended that highly sensitive areas be avoided for development as far as possible. Existing road infrastructure should be prioritised for use to minimise new road development. • Road infrastructure crossing drainage lines must be free-draining, non-erosive in nature and bank stability must be	Platdoring river. The small area of the CBA, which infringes the site to the west, was confirmed not to be of sensitive nature with the main drainage line in the center of the CBA being the driving feature from which the CBA has been delineated. This CBA will not be affected by the development as it infringes a mere 20 m into the site. The northern CBAs will also remain unaffected. It is also noteworthy that due to the low levels of transformation in the area, the irreplaceability of these CBAs is likely low. All major and minor drainage lines within the Rhino and Sunnyside solar PV areas are mapped as functional natural or near-natural ESAs. The ESAs are generally small and represent buffered areas around drainage features. This includes minor washes, the drainage areas largely devoid of riparian vegetation. It is unlikely that development would be able to avoid all ESAs and some habitat loss is inevitable. The minor drainage features in particular do not represent broad-scale ecological corridors and are unlikely to impact ecological functionality should development occur. Development will likely impinge on ESAs, however, these minor drainage lines are not particularly sensitive and the impacts would likely be low. The sites in question have been impacted by past and present anthropogenic activities, predominantly sheep farming, and can no longer be classified as pristine environments. This is evidenced from the grazing pressure and the presence of invasive species within the site. • Should development infringe on the 500 m regulated area surrounding any NFEPA identified wetland areas, or any specialist delineated wetlands, the applicant will need to approach the DWS and consider the relevant application processes for either a GA or a WUL. • It is recommended that highly sensitive areas be avoided for development as far as possible. Existing road infrastructure should be prioritised for use to minimise new road development. • Road infrastructure crossing drainage lines must be free-draining, non-erosive in nature and bank stability must be

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	maintained. The appropriate application process for Water Use must be followed. • Maintenance and monitoring plans should be compiled and be approved by the relevant regulatory authorities. These should relate to requirements of water use licencing, alien invasive control, and NEMA, specifically presences of SCCs and all mortalities of faunal species that occur on site. • While the presence of Black-footed Cats has been confirmed through previous assessments or direct sightings in the area under consideration, it was not found on site during the project assessment. This species is transient in nature and will avoid the area during construction. No direct impacts are expected. Nevertheless, should this species or any other SCC (faunal and floral) be identified on site during construction, this should be brought to the attention of the authors of this report to assist with the management thereof. • It is recommended that the mitigatory measures as mentioned in Section 7 of the Terrestrial report be implemented and included in the EMPr and Authorisation application.	maintained. The appropriate application process for Water Use must be followed. • Maintenance and monitoring plans should be compiled and be approved by the relevant regulatory authorities. These should relate to requirements of water use licencing, alien invasive control, and NEMA, specifically presences of SCCs and all mortalities of faunal species that occur on site. • While the presence of Black-footed Cats has been confirmed through previous assessments or direct sightings in the area under consideration, it was not found on site during the project assessment. This species is transient in nature and will avoid the area during construction. No direct impacts are expected. Nevertheless, should this species or any other SCC (faunal and floral) be identified on site during construction, this should be brought to the attention of the authors of this report to assist with the management thereof. • It is recommended that the mitigatory measures as mentioned in Section 7 of the Terrestrial report be implemented and included in the EMPr and Authorisation application.
Agricultural	The site is classified as low to medium agricultural sensitivity by the National Web-Based Environmental Screening Tool promulgated in terms of Regulation 16(1)(b)(v) of the EIA Regulations, enacted under the NEMA. This has been confirmed by this assessment, because of the agricultural production potential and current agricultural land use. The arid climate is the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky soils are an additional limitation. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the site has low agricultural potential, and its agricultural use is limited to grazing only. The assessed development will not result in any loss of viable, arable land and therefore poses minimal threat to agricultural production potential.	The site is classified as low to medium agricultural sensitivity by the National Web-Based Environmental Screening Tool promulgated in terms of Regulation 16(1)(b)(v) of the EIA Regulations, enacted under the NEMA. This has been confirmed by this assessment, because of the agricultural production potential and current agricultural land use. The arid climate is the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky soils are an additional limitation. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the site has low agricultural potential, and its agricultural use is limited to grazing only. The assessed development will not result in any loss of viable, arable land and therefore poses minimal threat to agricultural production potential.
Avifauna	A review of the data from the Southern African Bird Atlas Project (SABAP2) determined that a total of 183 bird species could potentially occur	A review of the data from the Southern African Bird Atlas Project (SABAP2) determined that a total of 183 bird species could potentially occur

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	within the broader area where the PAOI is located (the PAOI includes the land parcels of both Rhino PV and Sunnyside PV). Of the 183 species, 75 are classified as priority species for solar developments. Of the 75 solar priority species, 24 were recorded during the on-site surveys (Site Sensitivity Verification (SSV) site visit and pre-construction monitoring surveys), and 44 solar priority species have a medium to high likelihood of occurring regularly in the project area. • The proposed mitigation measures as detailed in Sections 8 and 9 of the Avifaunal report and the EMPr must be strictly implemented.	within the broader area where the PAOI is located (the PAOI includes the land parcels of both Rhino PV and Sunnyside PV). Of the 183 species, 75 are classified as priority species for solar developments. Of the 75 solar priority species, 24 were recorded during the on-site surveys (Site Sensitivity Verification (SSV) site visit and pre-construction monitoring surveys), and 44 solar priority species have a medium to high likelihood of occurring regularly in the project area. • The proposed mitigation measures as detailed in Sections 8 and 9 of the Avifaunal report and the EMPr must be strictly implemented.
Socio-Economic	The net positive impacts associated with the construction of the proposed development are expected to outweigh the net negative effects. The development is also envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy's diversification and a small reduction in the unemployment rate. The proposed Rhino PV and Sunnyside PV facilities should therefore be considered for development. It should, however, be acknowledged that the negative impacts would be largely borne by the nearby farms and households residing on them, whilst the positive impacts will be distributed throughout both the local and national economies. Due to this imbalance, it is recommended that the mitigation measures suggested, be strictly adhered to. Application of these mitigation measures will ensure that the negative impacts on the nearby farms and businesses are minimised and that the distribution of the potential benefits of the project are more balanced. It is important to value the landowners concerns and thus advised that further communication towards the landowners will be vital for the project.	The net positive impacts associated with the construction of the proposed development are expected to outweigh the net negative effects. The development is also envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy's diversification and a small reduction in the unemployment rate. The proposed Rhino PV and Sunnyside PV facilities should therefore be considered for development. It should, however, be acknowledged that the negative impacts would be largely borne by the nearby farms and households residing on them, whilst the positive impacts will be distributed throughout both the local and national economies. Due to this imbalance, it is recommended that the mitigation measures suggested, be strictly adhered to. Application of these mitigation measures will ensure that the negative impacts on the nearby farms and businesses are minimised and that the distribution of the potential benefits of the project are more balanced. It is important to value the landowners concerns and thus advised that further communication towards the landowners will be vital for the project.
Geotechnical	The assessment area is underlain by rock units of Adelaide Subgroup of the Beaufort Group and intrusive dolerite. the bedrock geology is covered by transported silts, sands and gravels, as well as well-developed calcrete. Some geotechnical constraints have been identified, primarily shallow and outcropping bedrock and calcrete which may cause excavation difficulties, and existing drainage channels with concentrated water flow. These conditions and associated constraints may be	The assessment area is underlain by rock units of Adelaide Subgroup of the Beaufort Group and intrusive dolerite. the bedrock geology is covered by transported silts, sands and gravels, as well as well-developed calcrete. Some geotechnical constraints have been identified, primarily shallow and outcropping bedrock and calcrete which may cause excavation difficulties, and existing drainage channels with concentrated water flow. These conditions and associated constraints may be

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	mitigated via standard engineering design and construction measures. The assessment Rhenosterkop Solar PV Facility area may be divided into two (2 No.) ZONEs (I and II) where similar geotechnical conditions are anticipated. ZONE I is defined by shallow occurring bedrock covered by thin, loose transported material and varying degrees of cemented calcrete. ZONE II can be characterised by relativity thicker alluvial deposits, identifiable by erosion paths, rills, and continuous drainage features. Intrusive investigation may reveal additional facets once variations in the subsoil profile become apparent. • The recommended mitigation measures must be implemented. • Further intrusive geotechnical investigations should be undertaken to confirm the engineering recommendations provided in this report.	mitigated via standard engineering design and construction measures. The assessment Rhenosterkop Solar PV Facility area may be divided into two (2 No.) ZONEs (I and II) where similar geotechnical conditions are anticipated. ZONE I is defined by shallow occurring bedrock covered by thin, loose transported material and varying degrees of cemented calcrete. ZONE II can be characterised by relativity thicker alluvial deposits, identifiable by erosion paths, rills, and continuous drainage features. Intrusive investigation may reveal additional facets once variations in the subsoil profile become apparent. • The recommended mitigation measures must be implemented. Further intrusive geotechnical investigations should be undertaken to confirm the engineering recommendations provided in this report.
Archaeological, Cultural Heritage and Palaeontological	The site forms part of a low significance cultural landscape representative of the Central Plateau of the Great Karoo possessing heritage value for historical, aesthetic, architectural, social and scientific reasons. The site possesses some landscape elements contributing to a composite cultural landscape, however, this particular area is already dominated by existing infrastructure. The addition of the proposed PV facility is therefore unlikely to negatively impact on any significant cultural landscape elements within this immediate context, or the broader context. The proposed development is located sufficiently far from the N1 scenic route, existing railway infrastructure and the Rhenosterkop farmstead that the anticipated impact to the heritage significance of these resources is considered to be negligible. Although the broader area has archaeological significance in terms of the sensitive dolerite outcrops in the area and associated rock art sites, no archaeological resources of significance were identified within the area proposed for the Rhino Solar Energy Facility (SEF). No further mitigation is recommended. A number of ruins of farm structures were identified within the development footprint for the Sunnyside SEF. These ruins are associated with the historic farming practices in this area and as such, have been	The site forms part of a low significance cultural landscape representative of the Central Plateau of the Great Karoo possessing heritage value for historical, aesthetic, architectural, social and scientific reasons. The site possesses some landscape elements contributing to a composite cultural landscape, however, this particular area is already dominated by existing infrastructure. The addition of the proposed PV facility is therefore unlikely to negatively impact on any significant cultural landscape elements within this immediate context, or the broader context. The proposed development is located sufficiently far from the N1 scenic route, existing railway infrastructure and the Rhenosterkop farmstead that the anticipated impact to the heritage significance of these resources is considered to be negligible. Although the broader area has archaeological significance in terms of the sensitive dolerite outcrops in the area and associated rock art sites, no archaeological resources of significance were identified within the area proposed for the Rhino Solar Energy Facility (SEF). No further mitigation is recommended. A number of ruins of farm structures were identified within the development footprint for the Sunnyside SEF. These ruins are associated with the historic farming practices in this area and as such, have been

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	determined to have contextual cultural value. These resources are Graded IIIC. A no development buffer of 50 metres (m) is recommended around these sites. Due to the age of these ruins, and their historic nature, excavations that take place in close proximity to these ruins are more likely to negatively impact associated buried archaeological heritage. It is recommended that this area be avoided by development activities. No observations of palaeontological significance were noted within the area proposed for development. However, the geology underlying the development area remains sensitive for impacts to significant palaeontological heritage. Based on the outcomes of the report, it is not anticipated that the proposed development will negatively impact on significant heritage resources on condition that: • The buffers recommended are implemented, i.e., a no-go buffer area of 400 m on Point ID 006, 50 m on Point ID 016, 046 to 050 and 100 m on Point ID 045 (refer to Table 4 of the HIA for more detail). • The HWC Chance Fossil Finds Procedure is implemented for the duration of construction activities. • The recommendations of the VIA are implemented. • Although all possible care has been taken to identify sites of cultural importance during the investigation of the study area, it is always possible that hidden or subsurface sites could be overlooked during the assessment. 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, burials or other categories of heritage resources are found during the proposed development, work must cease in the vicinity of the find and SAHRA must be alerted immediately to determine an appropriate way forward.	determined to have contextual cultural value. These resources are Graded IIIC. A no development buffer of 50 metres (m) is recommended around these sites. Due to the age of these ruins, and their historic nature, excavations that take place in close proximity to these ruins are more likely to negatively impact associated buried archaeological heritage. It is recommended that this area be avoided by development activities. No observations of palaeontological significance were noted within the area proposed for development. However, the geology underlying the development area remains sensitive for impacts to significant palaeontological heritage. Based on the outcomes of the report, it is not anticipated that the proposed development will negatively impact on significant heritage resources on condition that: • The buffers recommended are implemented, i.e., a no-go buffer area of 50 m on Point ID 019 to 022 (refer to Table 4 of the HIA for more detail). • The HWC Chance Fossil Finds Procedure is implemented for the duration of construction activities. • The recommendations of the VIA are implemented. Although all possible care has been taken to identify sites of cultural importance during the investigation of the study area, it is always possible that hidden or subsurface sites could be overlooked during the assessment. 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, burials or other categories of heritage resources are found during the proposed development, work must cease in the vicinity of the find and SAHRA must be alerted immediately to determine an appropriate way forward.
Risk (BESS)	• In order to highlight the maximum differences between the possible technology types, this study is based on the assumption that redox flow batteries (typically vanadium based chemistry)	• In order to highlight the maximum differences between the possible technology types, this study is based on the assumption that redox flow batteries (typically vanadium based chemistry)

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	could be installed within a building using bulk tanks, while solid state batteries (typically lithium based chemistry) would be installed in shipping containers that have hundreds of individual batteries combined into packs. Redox flow batteries can be installed in containers where the individual quantities of electrolyte involved would be smaller, although the hazards are the same just smaller in magnitude. • There will always be residual risks but with the recommended preventative and mitigative measures these could be considered suitably low and therefore broadly acceptable.	could be installed within a building using bulk tanks, while solid state batteries (typically lithium based chemistry) would be installed in shipping containers that have hundreds of individual batteries combined into packs. Redox flow batteries can be installed in containers where the individual quantities of electrolyte involved would be smaller, although the hazards are the same just smaller in magnitude. • There will always be residual risks but with the recommended preventative and mitigative measures these could be considered suitably low and therefore broadly acceptable.
Transport	• Feasible accessibility was assessed considering sight lines, access spacing requirements and road safety aspects and are discussed in this report. It is recommended to ensure that the access points are kept clear of vegetation and any other obstructions to ensure sight lines are kept. • In general, non-motorised transportation (NMT) is a dominant mode of transportation in rural areas, with private cars and minibus/taxis being the second-most used mode of transport, followed by buses. Currently, there are no known future planned public transport facilities in the vicinity of the site. However, generally the appointed contractor of a renewable energy project will provide either shuttle busses or accommodation on site for workers during the construction phase. • The highest trip generator for the proposed projects is expected during the construction phase. The actual construction stage peak hour trips are dependent on the construction period, construction programming, material availability, component delivery, abnormal load permitting, etc. The decommissioning phase is expected to generate similar trips as the construction phase. The recommended mitigation measures must be adhered to.	• Feasible accessibility was assessed considering sight lines, access spacing requirements and road safety aspects and are discussed in this report. It is recommended to ensure that the access points are kept clear of vegetation and any other obstructions to ensure sight lines are kept. • In general, non-motorised transportation (NMT) is a dominant mode of transportation in rural areas, with private cars and minibus/taxis being the second-most used mode of transport, followed by buses. Currently, there are no known future planned public transport facilities in the vicinity of the site. However, generally the appointed contractor of a renewable energy project will provide either shuttle busses or accommodation on site for workers during the construction phase. • The highest trip generator for the proposed projects is expected during the construction phase. The actual construction stage peak hour trips are dependent on the construction period, construction programming, material availability, component delivery, abnormal load permitting, etc. The decommissioning phase is expected to generate similar trips as the construction phase. • The recommended mitigation measures must be adhered to.
Visual/ Landscape	The sites are generally flat with elevated areas to the north-west and east of the Rhino SEF site and to the north of the Sunnyside SEF site. Further to the west and north-west of the sites, prominent mountain ranges are visible in the background. To the south-east and south of	The sites are generally flat with elevated areas to the north-west and east of the Rhino SEF site and to the north of the Sunnyside SEF site. Further to the west and north-west of the sites, prominent mountain ranges are visible in the background. To the south-east and south of

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	the sites fewer ridges exist, and isolated koppies and wide flat plains, typical of the Karoo, are more common. Ephemeral watercourses drain the relatively higher altitudes. The Platdoring River traverses the Remainder of Farm Rhenosterkop 155. The vegetation on the sites include dwarf spiny shrubland, few low growing trees, drought-resistant grasses cover and thicket. The area around the project is predominantly characterised by grazing lands (natural vegetation), with supporting infrastructure (roads, powerlines and a railway line [Rhino SEF]). A mining permit has been issued for a dolerite quarry ~2.5 km to the east of the Rhino SEF. The sites are located 27 to 30 km from the nearest town of Beaufort West. The Karoo National Park is located about 30 km to the east of the sites. The visual quality of the area can be experienced through long closed views across plains of low growing vegetation and prominences and ridgelines defining the horizon and occasional pockets of development such as farmsteads and small towns, such as Beaufort West. The visual quality of the sites is consistent with the visual quality of the region: natural, visually untransformed environment that can be experienced by receptors as barren and harsh due to the desolate nature of the landscape. Both sites are used for sheep grazing. Both Rhino and Sunnyside SEF range from not visible to marginally visible from various viewpoints around the SEF sites. As such, the visibility of these SEF sites is considered low. PV arrays will introduce a large, uniform anthropogenic artefact into the landscape discordant with scale, texture and current land use around the SEF sites. The discordant nature of the SEF will result in the SEF being experienced as a visual intrusion in the landscape. As such, the project is considered to have low integrity with the surrounding landscape. Glare modelling was conducted for the proposed PV arrays. Notable findings of the modelling are as follows: • No glare emanating from Rhino SEF will be experienced by receptors; and • Motorists will experience short durations of yellow category glare from Sunnyside	the sites fewer ridges exist, and isolated koppies and wide flat plains, typical of the Karoo, are more common. Ephemeral watercourses drain the relatively higher altitudes. The Platdoring River traverses the Remainder of Farm Rhenosterkop 155. The vegetation on the sites include dwarf spiny shrubland, few low growing trees, drought-resistant grasses cover and thicket. The area around the project is predominantly characterised by grazing lands (natural vegetation), with supporting infrastructure (roads, powerlines and a railway line [Rhino SEF]). A mining permit has been issued for a dolerite quarry ~2.5 km to the east of the Rhino SEF. The sites are located 27 to 30 km from the nearest town of Beaufort West. The Karoo National Park is located about 30 km to the east of the sites. The visual quality of the area can be experienced through long closed views across plains of low growing vegetation and prominences and ridgelines defining the horizon and occasional pockets of development such as farmsteads and small towns, such as Beaufort West. The visual quality of the sites is consistent with the visual quality of the region: natural, visually untransformed environment that can be experienced by receptors as barren and harsh due to the desolate nature of the landscape. Both sites are used for sheep grazing. Both Rhino and Sunnyside SEF range from not visible to marginally visible from various viewpoints around the SEF sites. As such, the visibility of these SEF sites is considered low. PV arrays will introduce a large, uniform anthropogenic artefact into the landscape discordant with scale, texture and current land use around the SEF sites. The discordant nature of the SEF will result in the SEF being experienced as a visual intrusion in the landscape. As such, the project is considered to have low integrity with the surrounding landscape. Glare modelling was conducted for the proposed PV arrays. Notable findings of the modelling are as follows: • No glare emanating from Rhino SEF will be experienced by receptors; and • Motorists will experience short durations of yellow category glare from Sunnyside

Specialist Study	Findings and Recommendations	
	Rhino SEF	**Sunnyside SEF**
	SEF while travelling on the gravel road. Less than 2.5 hours of yellow category glare will be experienced per year along the gravel road. • The recommended mitigation measures must be implemented.	SEF while travelling on the gravel road. Less than 2.5 hours of yellow category glare will be experienced per year along the gravel road. The recommended mitigation measures must be implemented.

Appendix E:

General Avifaunal Monitoring Plan

The following outlines a general monitoring plan (EMP) structure:

	Title: SCC community monitoring
Stressor	Project Activities, Climatic Changes
Receptor(s)	Avifauna SCC diversity and densities in each habitat type
Variables	Presence/absence of bird species of conservation concern, including observed breeding behaviour, proportion of SCC species present per sample site, species richness and densities.
Sampling Method	• Vantage Point counts – 2 x Three-hour counts (morning and evening) to be conducted at each monitoring plot • Drive Transects (species lists) – all species seen to be recorded along set transects to be driven during dawn till pre 10 am; and • Walked Transects (species lists) – all species heard and seen to be recorded along set transects to be walked at dawn chorus
Sampling Frequency	• Annual wet and dry season surveys; and • Continuous observations by ECO.
Sampling Site(s)	As provided in EMPr.
Change and Action Thresholds	Loss/decrease in any SCC parameter, unnatural decline (cannot be explained by stochastic weather changes) in species densities and/or richness. Similarly, positive changes (e,g, unusual presence in high densities of nomadic species such as Ludwig's Bustard or establishment of SCC breeding population such as Secretary Bird) in species densities and/or richness that indicate disturbance. Rapid surveys of greater surrounding area should be conducted to attempt to determine cause of change detected.
Data Analysis	All variables acquired should be statistically and graphically compared to the available data and the original targeted baseline data. Photographs should be taken of as many SCC observed in the field.
Reporting requirements	Annual reporting presenting data analysis results and mapping indicating locations of change. Specific reporting on negative change detection not directly attributable to Project activities and their cause. All reporting to be accompanied by GIS shapefiles and any original photographs.

	TITLE: Collision monitoring
Stressor(s)	Avifauna-powerline and infrastructure collisions (incidents)
Receptor(s)	Avifauna community composition, density and distribution
Variables	Species, geographical location and date of every avifaunal mortality
Sampling Method	For powerlines: Weekly surveys before dawn (prior to scavenger activity) by driving slowly along the servitudes and documenting each collision kill location and species (a georeferenced photograph as evidence is required).
Sampling Frequency	Weekly for powerlines
Sampling Site(s)	Along the entire powerline network on the PAOI.

Collision Action Thresholds	Collision frequency and intensity (#kills per species per unit time) will need to be assessed per species by specialist. However, any non-specific collision concentrations (> 10 kills per month clustering in a stretch of powerline) must initiate investigation and corrective measures (additional mitigation infrastructure).
Data Analysis	Geospatial analysis of density and dispersion of avifaunal mortalities highlighting the core areas of mortalities so that corrective measures can be implemented. Time-series and trend analysis to accompany evaluation to inform on temporal fluctuations (e.g., seasonality) and steer adaptive management. Cumulative species-specific summary statistics to be calculated.
Reporting requirements	Bi-annual reporting of faunal avifaunal mortalities associated with collision data highlighting locations where corrective measures are to be taken (if necessary).

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