REPORT

Environmental Management Programme (EMP) Report for the Proposed Mier Rietfontein Solar PV and Battery Storage Project, Located within the Dawid Kruiper Local Municipality, in the Northern Cape Province

Eskom Holdings SOC Ltd

Submitted to:

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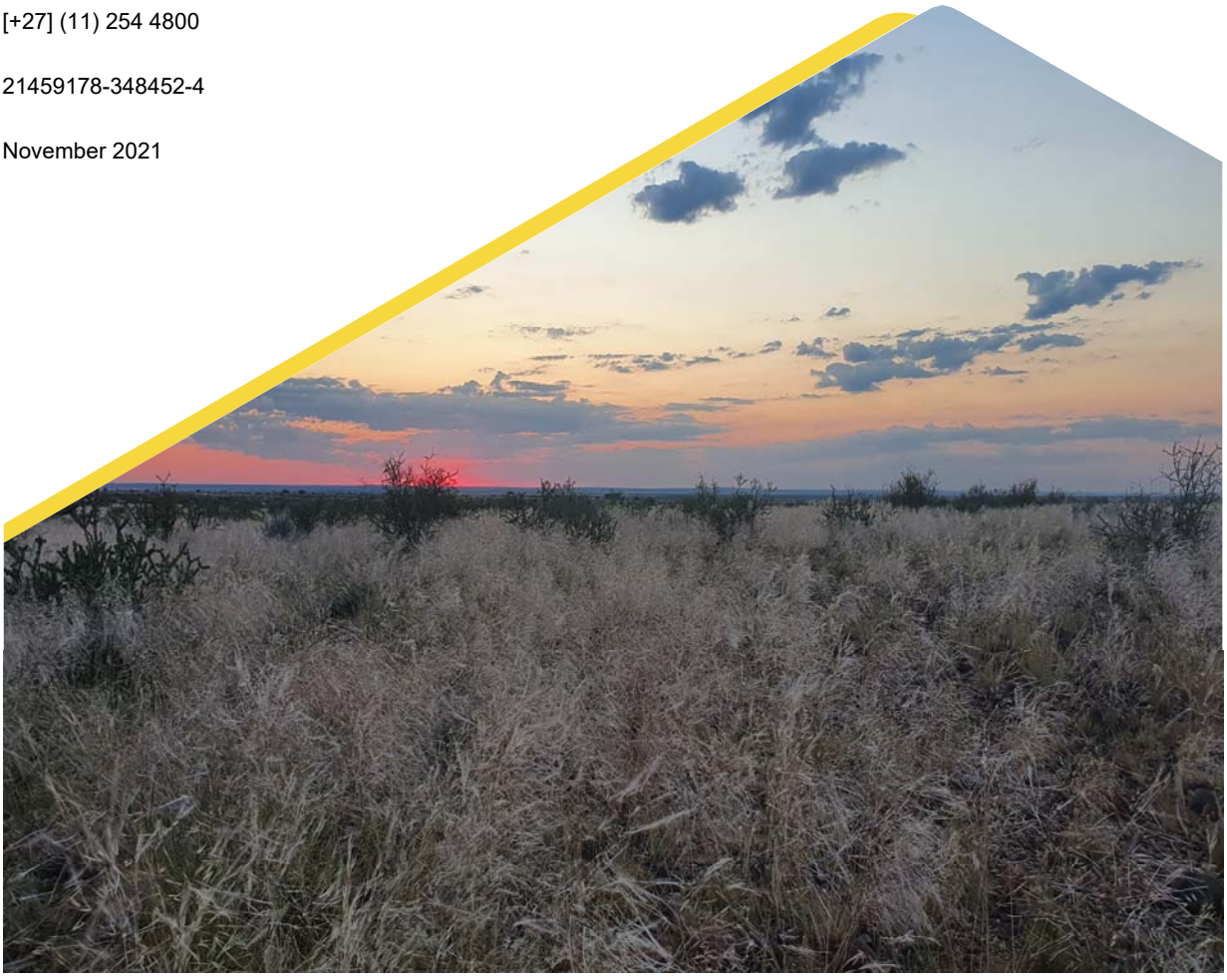

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Abbreviations and Acronyms

Abbreviation/acronym	Description
AC	Alternative current
BA	Basic Assessment
BESS	Battery Energy Storage System
BTUs	Battery tripping units
DC	Direct current
DFFE	Department of Forestry, Fisheries and the Environment
DKLM	Dawid Kruiper Local Municipality
c-Si	Crystalline silicon
CBA	Critical Biodiversity Area
CNC	Computer numerical control
ECO	Environmental Control Officer
EMPr	Environmental Management Programme Report
GHI	Global horizontal irradiance
HVAC	Heating, ventilation, and cooling
km	Kilometres
kV	Kilovolt
kW	Kilowatt
ℓ	Litres
LED	Light-emitting diode
LPUs	Large power users
LV	Low voltage
M	metres
MV	Medium voltage
MVA	Megavolt amperes
MWh	Megawatt hour
NCOU	Northern Cape Operating Unit
NMD	Notified maximum demand
O&M	Operating and maintenance
PV	Photovoltaic
RMU	Ring Main Unit
S/Stn	Substation
UPS	Unlimited power supply
XLPE	Cross linked polyethylene cable

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1.0 INTRODUCTION

Golder Associates Africa (Pty) Ltd. ("Golder") was appointed by Eskom Holdings SOC Ltd ("Eskom") to undertake a basic assessment ("BA") process for the proposed Mier Rietfontein Solar PV and Battery Storage Project (hereafter referred to as the "Project"), located in the Dawid Kruiper Local Municipality ("DKLM"), in the Northern Cape Province (DFFE Ref. 14/12/16/3/3/1/2415).

2.0 THIS EMP REPORT

The purpose of this Environmental Management Programme (EMP) report is to present the environmental mitigation measures to be put in place to manage the outcomes and impacts of the proposed Project.

3.0 THE PROJECT

3.1 Background

As part of Eskom's commitment to implement clean energy projects, Battery Energy Storage System ("BESS") projects, totalling 1 440 MWh, are to be installed at various locations across the country. These projects are expected to be executed in two phases:

- **Phase 1:** Installation of BESS projects, totalling approximately 800 MWh, at Eskom distribution sites; and
- **Phase 2:** Installation of BESS projects, totalling approximately 640 MWh, at locations closer to the renewable power plant sites.

The KwaZulu-Natal, Eastern Cape, Western Cape, and Northern Cape operating units conducted preliminary studies to assess the suitability of selected sites for the Phase 1 installation of BESS on their electrical grids.

Subsequently, the Northern Cape Operating Unit ("NCOU") conducted an independent study on the Phase 2 installation of BESS at the Rietfontein-Rietfontein 33kV Overhead Line (hereafter referred to as the "Rietfontein feeder").

The Rietfontein feeder is supplied by NamPower through Mier 33kV Substation ("S/Stn"), which is located near Rietfontein Border Post (see Figure 3). Mier S/Stn is supplied by Nabas-Rietfontein line on the Namibian side. This line was built at 66 kV but is currently operated at 33 kV. The total length of this line is about 140 km.

On the South African side, the Rietfontein feeder supplies several small rural towns, namely Rietfontein, Philandersbron, Loubos, Groot Mier, Klein Mier, and Welkom (Figure **1**). The Rietfontein feeder also supplies three large power users ("LPUs"), namely the Rietfontein Border Post, Kgalagadi Transfontier Park, and Botswana Power Corp.

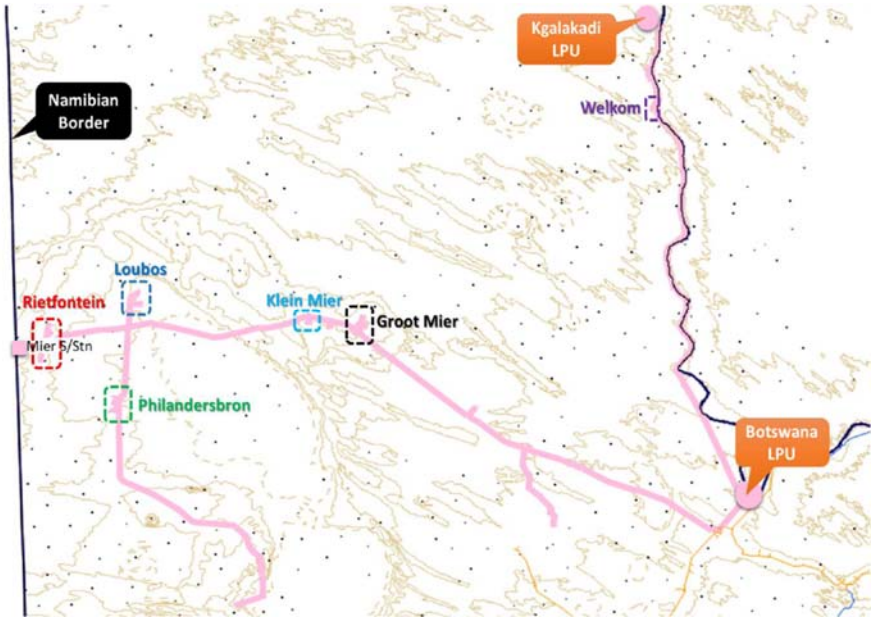


Figure 1: Small rural towns and LPUs supplied by the Rietfontein feeder

Currently, Eskom has an international Energy Trading Agreement with Nampower for notified maximum demand ("NMD") of 1.5 megavolt amperes ("MVA"). Nampower is unable to increase the NMD to address shortages on the Rietfontein feeder due to limitations on the infrastructure on the NamPower side. This is because Nampower does not have the transformer capacity at Nabas 66/33kV S/Stn to increase the NMD. Furthermore, the technical losses on the Nabas-Rietfontein line will increase to above 10% if the NMD is increased from 1.5 MVA to 2 MVA. These losses are deemed to be unacceptable by both NamPower and the Namibia Energy Regulator.

As an alternative to increasing the capacity of the existing substations and overhead powerlines, the proposed Mier Rietfontein Solar PV and Battery Storage Project will be developed to increase the capacity of the Rietfontein feeder. The proposed project will unlock capacity to connect the areas identified in Table 1.

Table 1: Areas of identified electrification connection

Area	Number of Connections	ADMD (kVA)	Total load (kVA)
Loubos	26	0.8	20.8
Philandersbron	42	0.8	33.6
Rietfontein	77	0.8	61.6
Klein Mier	20	0.8	16
Groot Mier	29	0.8	23.2
Welkom	25	0.8	20
Andriesvale	50	0.8	40
Total	**269**		**215.2**

3.2 Location

The preferred sites (solar PV with BESS, and telecommunications tower) for the proposed Project are located near the town of Rietfontein, in the DKLM, in the ZF Mgcawu District Municipality, in the Northern Cape Province (Figure 3).

The preferred site layouts for proposed solar photovoltaic (PV) and BESS site and telecommunications tower site, as well as the sensitivity overlays are provided in Figure 4 and Figure 5.

Table 2 presents a summary of the details of the preferred site alternative for the solar PV and BESS site, as well as the telecommunications tower site, which make up the proposed Project.

Table 2: Details of the preferred site alternatives for the Project

Aspect	Description
Preferred site alternative for the solar PV and BESS site	
21-digit Surveyor General Code of each cadastral land parcel	C02800000000058500000
Physical address	The preferred site is located off the R31, near the Rietfontein Border Post.
Farm name	Mier No. 585
GPS Point Coordinates	20°0'31.535" E; 26°45'11.972" S 20°0'31.442" E; 26°45'22.690" S 20°0'26.393" E; 26°45'22.655" S 20°0'19.236" E; 26°45'19.477" S 20°0'15.951" E; 26°45'21.611" S 20°0'1.700" E; 26°45' 23.794" S 20°0'1.176" E; 26°45' 25.272" S 19°59' 59.938" E; 26°45' 25.240" S 20° 0'0.000" E; 26°45' 24.119" S 20° 0'1.307" E; 26°45' 22.843" S 20° 0'15.469" E; 26°45' 20.704" S 20° 0'17.716" E; 26°45' 18.802" S 20° 0'24.269" E; 26°45' 11.921" S
Application area	10 ha
Zoning	Agricultural
Local Municipality	Dawid Kruiper Local Municipality
District Municipality	ZF Mgcawu District Municipality
Province	Northern Cape
Preferred site alternative for the telecommunications tower site	
21-digit Surveyor General Code of each cadastral land parcel	C02800000000058500130
Physical address	The preferred site is located 800m north of the R31 and 5km southeast of Groot Mier.
Farm name	Mier No. 585
GPS Point Coordinates	20°22'3.430" E; 26°46' 31.355" S 20°22'3.427" E; 26°46' 31.842" S 20°22'3.970" E; 26°46' 31.845" S 20°22'3.973" E; 26°46' 31.358" S
Application area	0.0225 ha
Zoning	Agricultural
Local Municipality	Dawid Kruiper Local Municipality

District Municipality	ZF Mgcawu District Municipality
Province	Northern Cape

The preferred site for the solar PV and BESS site is surrounded by the following land uses:

- **North:** The R31, a provincial road linking Kimberly to the Rietfontein, is located immediately north of the preferred site. The areas further north are mostly undeveloped.
- **East:** The border between Namibia and South Africa is approximately 500 m to the east. The areas between the preferred site and border is mostly undeveloped, with the exception of the border post and a telecommunications tower.
- **South:** The areas to the south of the preferred site are mostly undeveloped.
- **West:** The areas immediately west of the preferred site are mostly undeveloped. The town of Rietfontein, is located approximately 1 km to the west. There is also a water reservoir and telecommunications tower approximately 500 m to the west.

The preferred site for the telecommunication tower site is surrounded by the following land uses:

- **North:** The Groot Mier is located ~5km northwest of the preferred site. The areas further north are mostly undeveloped.
- **East:** The areas to the east of the preferred site are mostly undeveloped agricultural grazing areas.
- **South:** The R31, a provincial road linking Kimberly to the Rietfontein, is located ~800 m south of the preferred site. The areas to the south of the preferred site are mostly undeveloped agricultural grazing areas.
- **West:** The areas to the west of the preferred site are mostly undeveloped agricultural grazing areas.

The area in which the preferred sites for the Project are located are currently zoned as “G.a Vacant Land within Urban Edge” on the SDF but zoned as “Agricultural” according to the municipality; however the areas remain vacant. The zoning is used for areas with land uses other than the conservation areas, sensitive areas, agricultural areas, urban areas, industrial areas, and surface infrastructure, and buildings.

3.3 Description

The following section presents a brief description of the proposed Project and is largely based on the *Rietfontein Feeder Solar PV Plant Concept Design Report* (Report no. 474-12447) and the Rietfontein PV, BESS & Cap Bank Project: Rietfontein-Rietfontein 33kV Feeder & Wessels-Klipkop 22kV Feeder Report (dated 2 February 2021) prepared by Eskom.

The proposed Project will consist of 12 independent PV blocks of 2.04 megawatts (“MW”) and 11 independent BESS of 1.54 MW.

The installation of these PV blocks and BESS will be staggered according to the expected growth in electrical demand:

- Initial installation of 5 x 170 kW PV blocks and 4 x 140 kW BESS for the “electrification scenario”
- Installation of an additional 3 x 170 kW PV blocks and 3 x 140 kW BESS for the “LPUs scenario”
- Installation of an additional 4 x PV blocks and 4 x 140 kW for the “unforeseen demand scenario”

It is proposed that the site will be unmanned and that the Mier Rietfontein solar PV and BESS Project will be remotely monitored and controlled. To ensure communication to the Project, a telecommunications tower to the proposed BESS is required. The telecommunications tower will be positioned close to the village of Groot Mier. The footprint area for the tower is only 15 x 15 m², which will also contain a small equipment room. The charging of the BESS from the PV blocks will done via network control, allowing for the PV blocks and BESS to operate independently from each other.

Table 3 presents a brief description of the proposed Project's main infrastructure.

Table 3: Proposed Project's main infrastructure

Infrastructure	Description
BESS	A total of 11 independent BESSs of 140 kW (560 kWh) each will be installed. The total installed capacity of the BESSs will be 1 540 kW (6 160 kWh). The BESSs will be housed within standard shipping containers (~63 m^2). Assuming that the BESS density is 2 MWh per container (worst case scenario), at least three containers will be required, with a total footprint of 189 m^2.
PV modules	PV modules are made up of PV cells that generate electricity on exposure to solar radiation. It is proposed that poly crystalline silicon ("multi c-Si") PV modules will be used. These PV modules are based on poly crystalline cells, which are manufactured by melting many fragments of silicon together to form the wafers that are used in the PV cells. The main advantages of these PV modules is the relatively good efficiency, low cost per unit, proven technology, and availability. The main disadvantage of these PV modules is the lower efficiency when compared to other PV modules, such as mono crystalline silicon PV modules. The PV modules will be connected in series to form Strings. Each string will consist of 16 PV modules. These Strings will be combined via combiner boxes to form PV blocks. Each block will consist of 38 Strings with a total of 608 PV modules. The PV modules will be north facing with a tilt angle of 25 degrees. The tilt angle of the PV modules is typically based on the latitude, which is approximately 27 degrees at the preferred site. Currently, the Canadian Solar Inc. CS6X-320P is the preferred PV module technology option. Each module is 320 W_{DC} with a nominal efficiency 16.82%.
Mounting structures	The PV modules will be mounted at the appropriate orientation to the sun using fixed mounting structures, such as those shown in the below.

Infrastructure	Description
	 **Figure 2: Examples of fixed mounting structures** The fixed mounting structure will consist of two rows of PV modules, with a top and bottom row. A total of 64 PV panels will be installed on each structure (i.e., four strings). The distance between each structure is approximately 7.76 m. This is to allow for a 4 m wide road for cleaning and maintenance, as well as shadowing effects of adjacent rows. The height of each structure will be up to 3.5 m.
Inverters	Inverters will be used to convert the direct current (“DC”) electricity from the PV modules to the alternative current (“AC”) electricity at grid frequency. Each 170 kW PV block will have a 200 kW inverter. The size of the inverter is greater than the output of the PV block to account for days with higher solar irradiance where the PV block output could exceed the inverter size. Currently, the Ingeteam Energy S.A. INGECON SUN 200 TL U 330 is the preferred inverter technology option. It is proposed that each inverter will be housed in a MV Inverter Cabin together with a LV switchboard, step-up transformer, MV switchgear and protection, and an LV/LV auxiliary supply transformer.
Step-up transformers	Transformers will be used to step up the voltage from low voltage (“LV”) at the output of the inverter to the required medium voltage (“MV”) at the point of connection. Each 170 kW PV block will have a LV/MV transformer. Either liquid immersed or non-liquid immersed transformers will be used. If liquid immersed transformers are used, then secondary containment will be provided to prevent oil leakage.
Auxiliary transformers	Two 3.3/0.4kV auxiliary transformers will be installed to supply power to the auxiliaries of the proposed Project. Auxiliary loads include heating, ventilation, and cooling (“HVAC”) systems, lighting, socket outlets, security systems (perimeter lighting, cameras, gate motors, etc.), battery tripping units (“BTUs”), unlimited power supply (“UPS”), telephones, fire detection, and so on. It is proposed that these transformers will be tapped from the overhead line prior to the Mier substation connection.

Infrastructure	Description
MV switchgear	MV switchgear will be used to enable power distribution and electrical protection up to the point of connection. Each 170 kW PV block will have MV switchgear, which will be housed in a MV Inverter Cabin. Ring Main Unit ("RMU") switchgear is the preferred technology option due to the low fault and current ratings, simple protection and control capabilities, and lower cost, space, and maintenance requirements.
Battery tripping units	BTUs will be used to provide DC supply to the switchgear control and protection circuits. These BTUs will be housed in a MV Inverter Cabin.
Uninterruptable power supply ("UPS")	An UPS system, including battery backup, will be used to provide 230 V_{ac} power to the server room, control room, and network panels.
AC cables	Underground AC cables will be used to connect the PV and BESS to the Mier switching station, while overhead cables will connect the Mier switching station to the existing Rietfontein 33kV feeder. Cross linked polyethylene cable ("XLPE") will be used for the AC cables as it is lighter, has better electrical and thermal properties, less maintenance, and easier terminating procedure. XLPE cable is also available country wide and has been used in most installations.
Operating & maintenance ("O&M") building	The O&M building will be 200 m^2 in extent, and include a control room, office, ablution facilities, server and equipment room, and spares storeroom (for the storage of spare solar panels and electronic equipment).
Parking area	A vehicle parking area will be located close to the O&M building. This parking area will have sufficient capacity for a minimum of four vehicles.
Potable water supply and reticulation	Potable water is required to service the two personnel who will be working in the O&M building from time to time. The potable water will be used for domestic purposes, namely drinking, cleaning, and ablution facilities. The preferred option is to source potable water from the municipal water distribution network. However, if this is option is not technically or financially viable, alternative water sources will be investigated. This includes the transport of potable water to site using water tankers or the onsite abstraction and treatment of groundwater[1]. Potable water will be stored in a closed water tank with a capacity 2000 ℓ. This is approximately one week's supply to the two staff that will be onsite from time to time. The water tank will be positioned to ensure water supply of at least 2 bar pressure to all outlets using gravity feed or pump system. The water tank will have an inlet valve for filling, drain nozzle, and outlet valve for supplying potable water to the O&M

[1] The source of potable water will only be confirmed during the detailed design phase.

Infrastructure	Description
	building. The tank will also have an overfill protection, low level, and high-level indicators.
Process water supply and reticulation	Process water is required for PV module washing and dust suppression activities. The quality of the water required for PV module washing will be based on the requirements of the manufacturer. This is likely to be potable water quality at a minimum. Preliminary estimates are that the PV modules will need to be cleaned twice a year, in June and September, or when reference cells show a difference of global horizontal irradiance ("GHI") measurements of greater than 50 Wh/m^2. The preferred option is to source process water from the municipal water distribution network. However, if this is option is not technically or financially viable, alternative water sources will be investigated. This includes the transport of potable water to site using water tankers or the onsite abstraction and treatment of groundwater[2]. The PV modules will be cleaned using taps located at various locations around the site. The distance between each tap will be less than 50 m.
Sewage disposal	Sewage disposal is required for the two personnel who will be working in the O&M building from time to time. The preferred option is to link into the municipal sewage disposal infrastructure. However, if this is option is not technically or financially viable, alternative sewage disposal options will be investigated. This includes the use of onsite sanitation such as portable toilets during construction[3].
Roads	Access to the site will be from R31 via 5 m wide access road. In addition, there will also be a 5 m wide perimeter road, 3 m wide access roads to the inverters and transformers, and 5 m wide internal roads for maintenance purposes. All the roads will be gravel with a polymer binder to minimise dust. All the roads will also have a suitable drainage system to control stormwater runoff and to prevent erosion.
Telecommunications tower	Microwave links are reliable means of telecommunication network to connect to the existing network and is required to ensure communication to the solar PV and BESS Project site. In order for this option to work a new telecommunications tower site (15 m x 15 m) will be established. The new radio links will be installed between Mier substation to the middle site then to Andriesvale radio station. No guy wires will be used for the tower. The tower will have an equipment container (3 m x 4 m).

[2] The source of process water will only be confirmed during the detailed design phase.

[3] The sewage disposal option will only be confirmed during the detailed design phase.

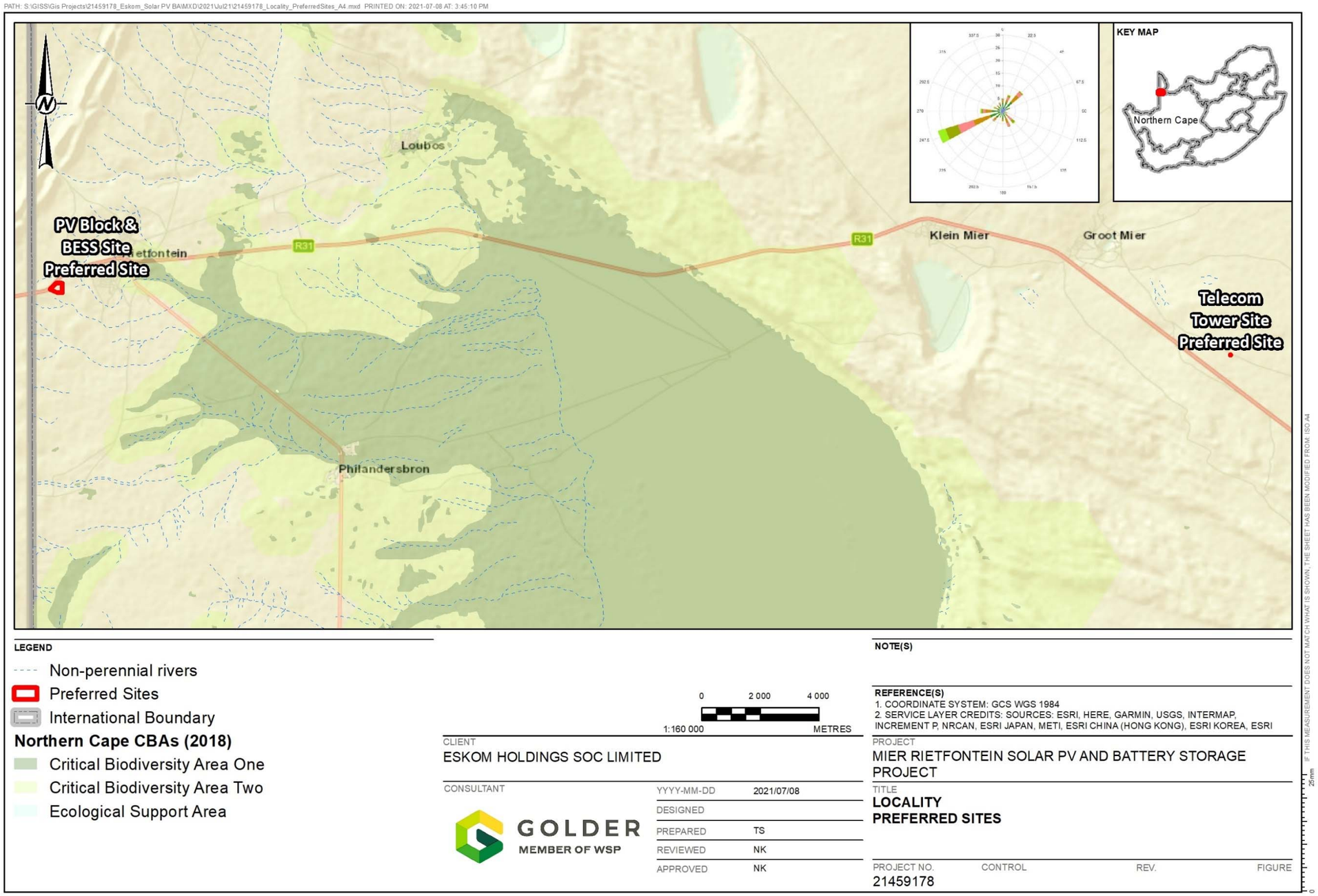
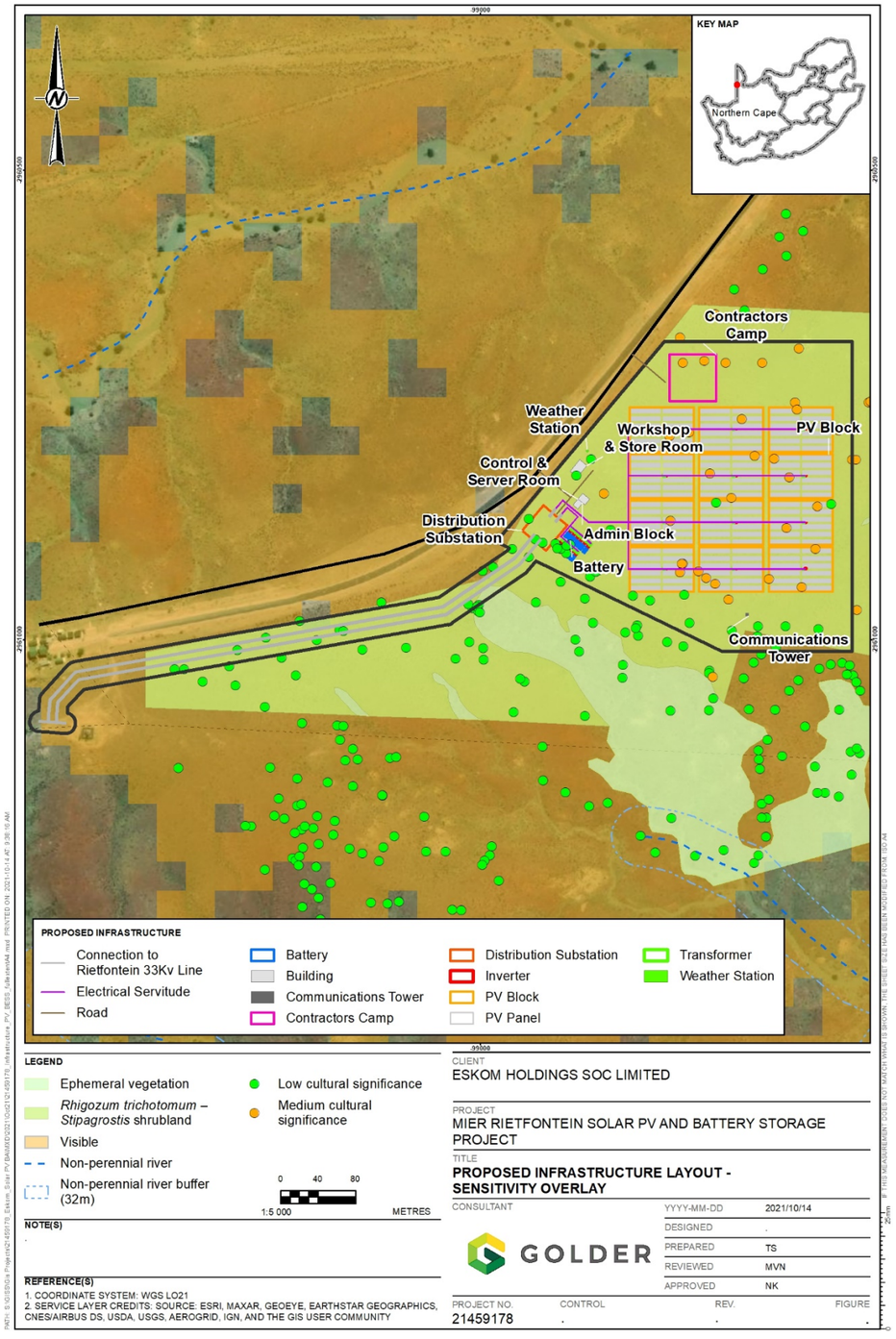


Figure 3: Preferred sites for the Project location



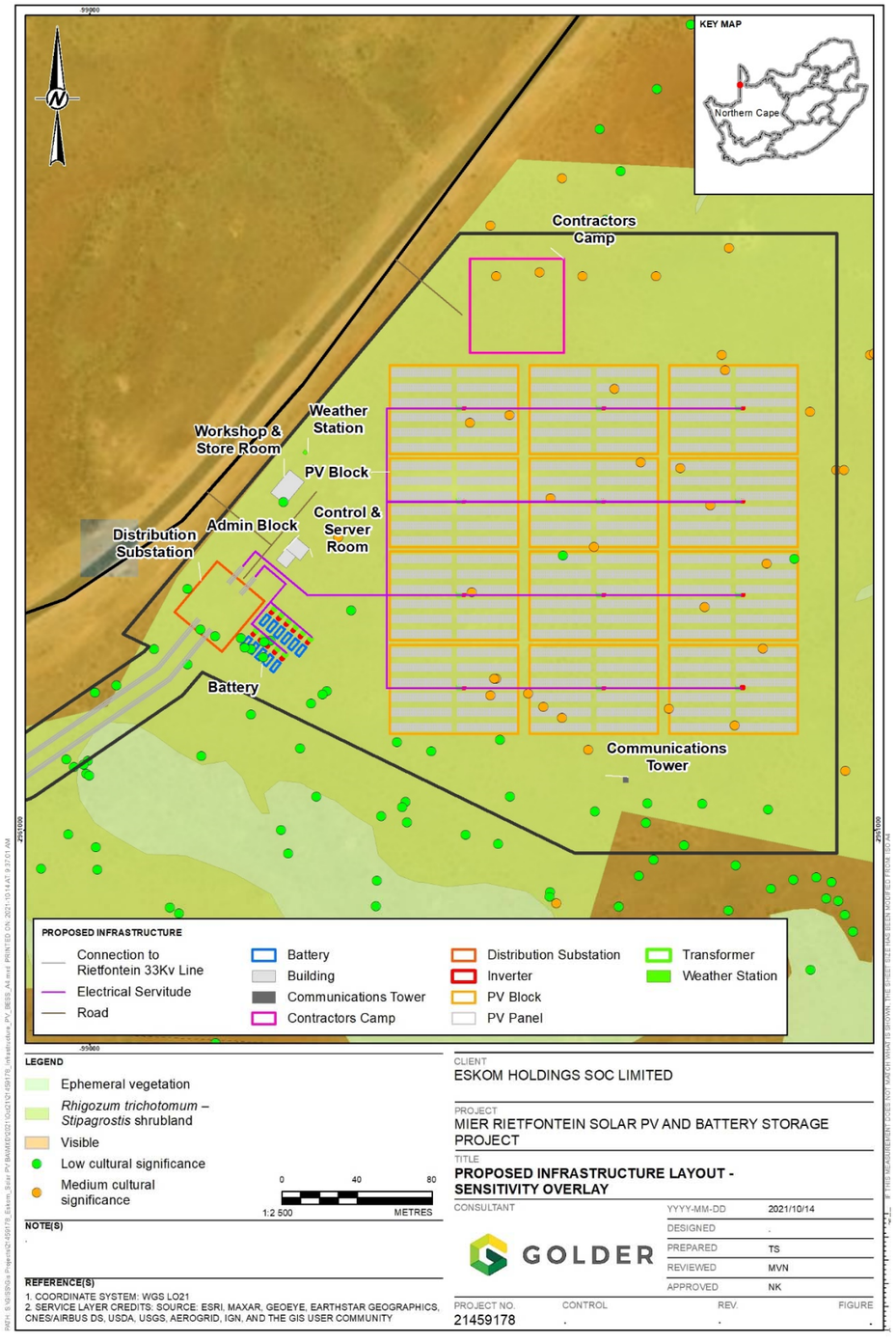
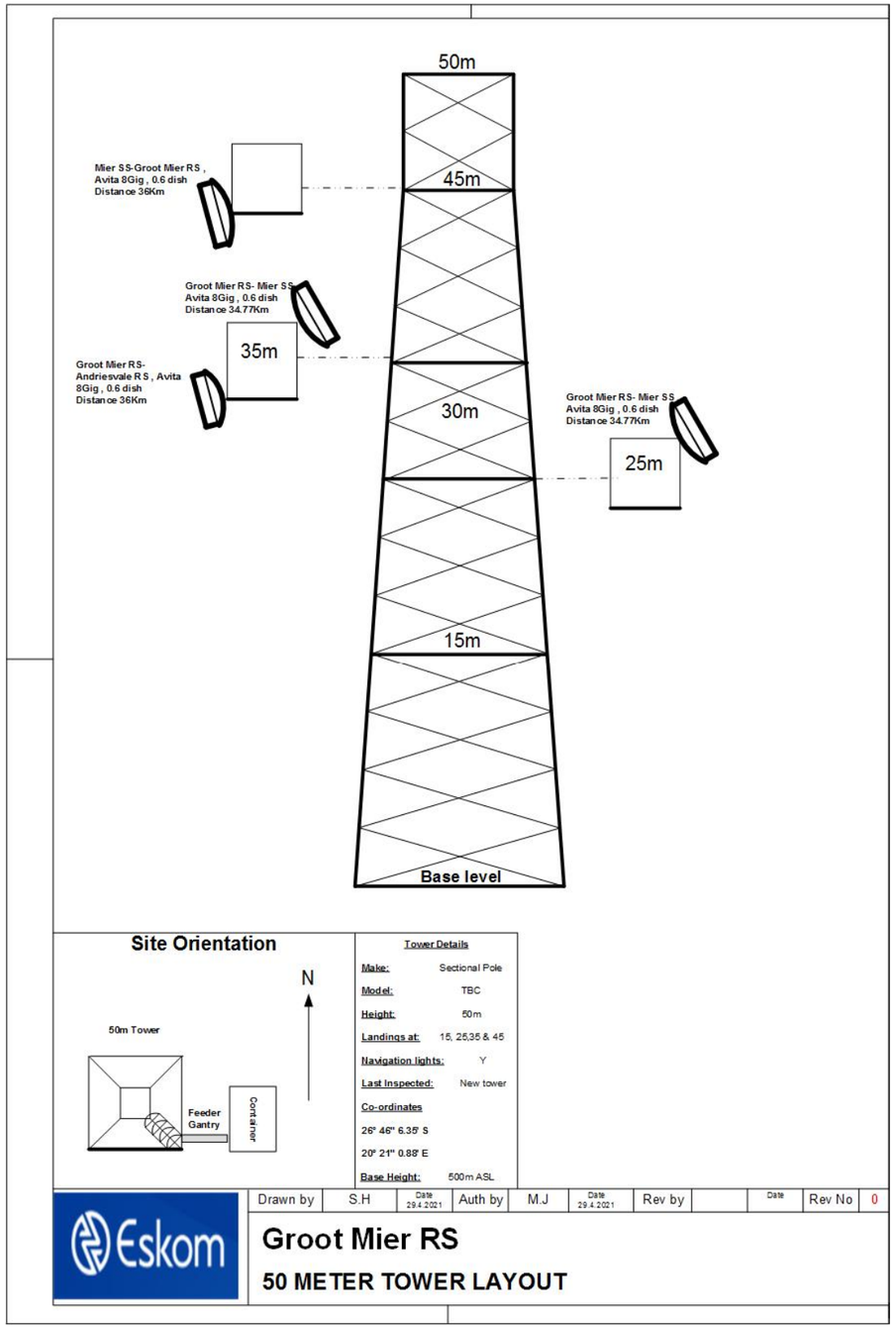


Figure 4: Proposed solar PV and BESS site layout and sensitivity overlays



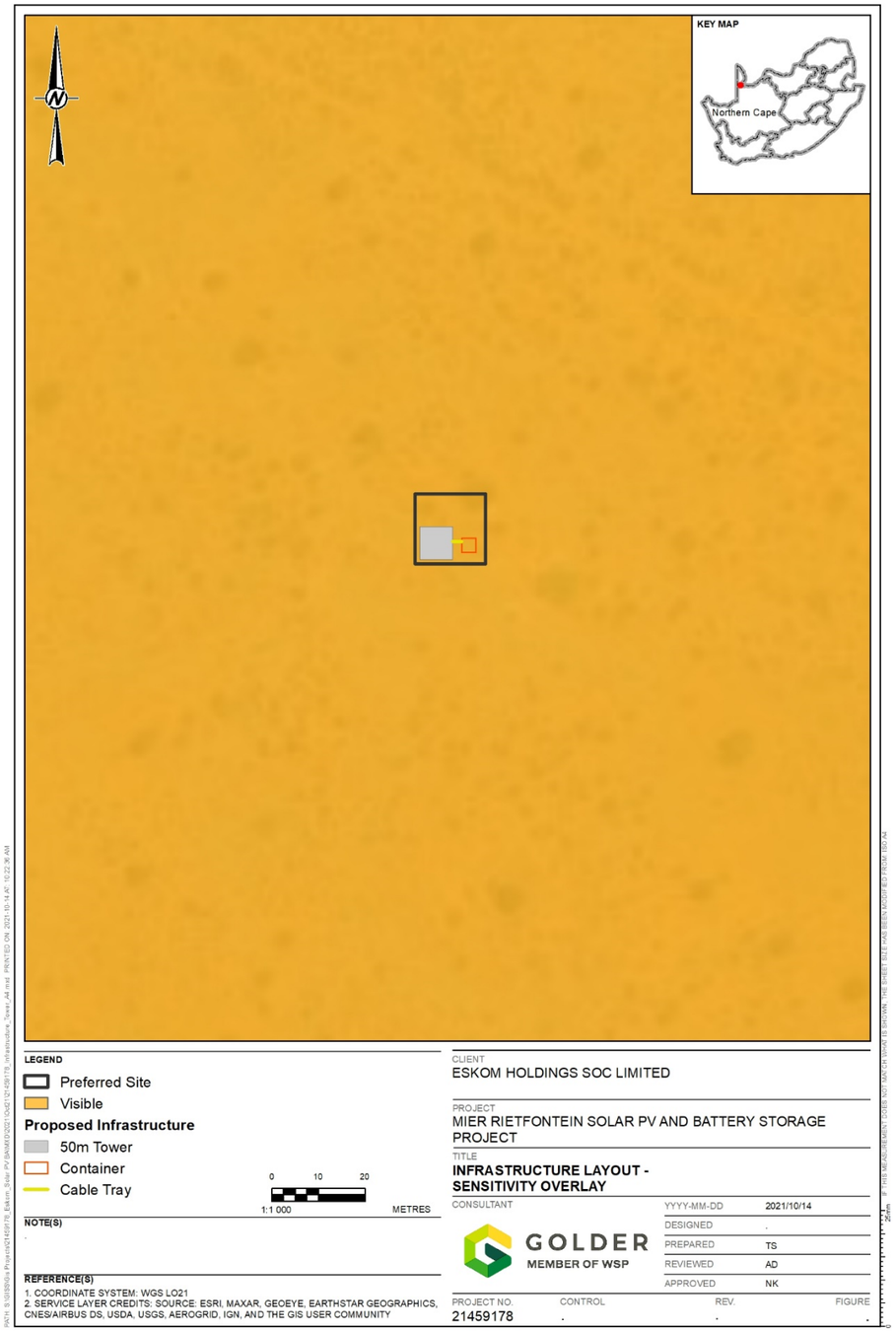


Figure 5: Proposed telecommunications tower site layout and sensitivity overlay

4.0 ENVIRONMENTAL MANAGEMENT PROGRAMME

4.1 Approach to Impact Management

The following section presents the proposed impact management measures to avoid, reverse, mitigate and/or manage the potential impacts/risks of the proposed Project.

As with the assessment of potential impacts/risks, the impact management actions have been arranged according to the following project phases:

- Pre-construction
- Construction
- Operational
- Closure
- Post-closure

For each impact management action, the following information is provided:

- **Category:** The category within which the potential impact/risk occurs
- **Potential impact/risk:** Identified potential impact/risk resulting from the pre-construction, construction, operation, and closure of the proposed Project
- **Description:** Description of the possible impact management action
- **Prescribed standards or practices:** Prescribed environmental standards or practices with which the impact management action must comply. Note that only key standards or practices have been listed
- **Mitigation type:** The type of mitigation measure. This includes the following:
  - Avoidance
  - Minimisation
  - Rehabilitation or restoration
  - Offsetting
- **Time period:** The time period when the impact management actions must be implemented
- **Responsible persons:** The persons who will be responsible for the implementation of the impact management actions.

4.2 Impact Management Measures

Table 4 presents a summary of the proposed impact mitigation actions during the pre-construction, construction, operational, closure (including decommissioning), and post-closure phases.

Table 4: Summary of proposed EMP impact mitigation measures

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
Pre-construction phase							
	Terrestrial Flora Communities	Habitat loss and modification	At the PV Blocks and BESS site, all proposed Project infrastructure should be positioned outside a 10 m buffer around the ephemeral vegetation community; and The layout of the telecommunications tower site should be positioned to avoid clearing any large, protected trees (e.g., Vachellia erioloba).	N/A	Avoidance	Prior to construction phase	Project manager
	Basic services	Increase in pressure on sewerage treatment and disposal infrastructure.	If technical feasible, sewerage must be treated onsite via septic tank and soakaway system.	-	Mitigation	Prior to start of construction	Project Manager
Construction phase							
	Terrestrial Flora Communities	Habitat loss and modification	Vegetation clearing for the Project, including the contractor site office and laydown area, should be restricted to the proposed Project footprints only, with no clearing permitted outside of these areas. The footprints to be cleared should be clearly demarcated prior to construction to prevent unnecessary clearing outside of these areas. No heavy vehicles should travel beyond the marked works zone.	N/A	Minimisation	During construction phase	Project manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			Preferably, clearance in advance of construction should be done during the drier seasons; and Removed topsoil should be stockpiled and used to rehabilitate all non-operational disturbed areas. Native species planting (where possible with regard to safety and not hindering firebreak outs near solar panels) should be used to aid in the reduction of soil erosion and additional loss of vegetation beyond the footprint of cleared areas; and enhance landscape connectivity around the cleared solar farm footprint.				
	Terrestrial Flora Communities	Establish and spread of alien invasive species	An alien invasive species control programme must be developed for the Project. It is recommended that the programme include: A combined approach using both chemical and mechanical control methods; Periodic follow-up treatments, informed by regular monitoring; and A focus on all areas immediately adjacent to the Project footprints, and in particular, areas of Ephemeral Vegetation adjacent to the Study Area.	N/A	Minimisation	During construction phase	Project manager
	Terrestrial Fauna Communities	Mortality and disturbance of fauna	An ECO should be on-site during vegetation clearing to monitor and manage any wildlife-human	N/A	Avoidance / Minimisation	During construction phase	ECO

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			interactions. The ECO should be trained in inter alia, snake handling, species identification and identifying potential bat roosting sites; A low-speed limit (recommended 20-40 km/h) should be enforced on site to reduce wildlife collisions; The handling, poisoning and killing of on-site fauna by contractors must be strictly prohibited.				
	Bats	Loss/disturbance of bat individuals	Preferably, conduct vegetation clearance during dry season (April to September).	N/A	Minimisation	During construction phase	Project manager
	Bats	Reduction in extent of foraging habitat for bats	See mitigation measures for Habitat loss and modification	N/A	Minimisation	During construction phase	Project manager
	Terrestrial Flora and Fauna Communities	Dust generation	Active dust suppression using suitable dust suppressant should be implemented during construction, if dust levels become problematic.	N/A	Minimisation	During construction phase	Project manager
	Terrestrial Flora Species	Loss of flora of conservation concern	Surveys of each development footprint should be conducted to identify and record the number of protected flora species that require clearing; Clearing and/or relocation permits should be obtained from the provincial authority to clear or remove provincially protected flora species occurring on-site; and	N/A	Avoidance / Minimisation	Prior to construction phase	Project manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			If possible, rescued plants (e.g., small succulents/geophytes) should be relocated to an adjacent area of natural habitat.				
	Avifaunal	Displacement as a result of habitat loss	No development within the areas delineated as HIGH sensitivity. Construction activity should be restricted to the immediate footprint of the infrastructure. All construction activities should be strictly managed according to generally accepted environmental best practice standards, so as to avoid any unnecessary impact on the receiving environment. All temporary disturbed areas should be rehabilitated according to the site's rehabilitation plan, following construction. A carefully considered operational surface water/drainage management plan for the site must be developed. The operational surface water management plan must stipulate the use of environmentally friendly and acceptable cleaning products.	Best practice for avifaunal fieldwork	Minimisation	Commencement the completion of construction. Water management strategies developed prior to commissioning and implemented during the operational life.	Construction Manager, ECO & Avifaunal Specialist.
	Avifaunal	Displacement as a result of disturbance	Conduct a pre-construction inspection (avifaunal walk-through) of the final solar PV and BESS layout, road and power line routes and telecommunication tower site to identify	Best practice for avifaunal fieldwork	Minimisation	Commencement to the completion of construction.	Construction Manager, ECO & Avifaunal Specialist.

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			Red List species that may be breeding within footprint of the Solar PV, BESS Project and telecommunication tower sites and the road and power line servitudes to ensure that the impacts to breeding species (if any) are adequately managed. Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. Measures to control noise should be applied according to current best practice in the industry.				
	Dust	Negative impact of dust from site clearance activities, earthworks, and materials handling.	Where possible, limit construction activities to the wetter months when soil moisture content and vegetation cover is the greatest. Where possible, clear the site as the work front progresses, thereby limiting the exposed areas. Where possible, shelter (e.g., using shade clothe fencing) onsite sources of dust (e.g., soil stockpiles) to reduce wind speeds. Exposed surfaces and soil stockpiles must be dampened periodically to avoid excessive dust. Where possible, surfactants should be used to reduce water usage. Limit speed of construction vehicles to maximum 20 km/hr while onsite.	NEM: AQA (2004) National Dust Control Regulations (2013)	Avoidance Minimisation	Duration of construction phase	Site Foreman HSE Manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			Dust track-onto the R31 must be cleaned at the end of each day. A complaints register must be kept at the site office or security office. All complaints about dust must be recorded in writing in the complaints register. Complaints must be addressed as soon as possible.				
	Noise	Negative impact of noise from construction vehicles, equipment, and workers.	Construction activities must be limited to daytime hours (06h00 to 18h00). No construction activities are permitted on Sundays. People living nearby the construction site must be notified in advance of any particularly noisy activities, such as jackhammers and blasting. Construction vehicles and equipment that are excessively noisy due to poor maintenance are not permitted to be used onsite. A complaints register must be kept at the site office or security office. All complaints about noise must be recorded in writing in the complaints register. Complaints must be addressed as soon as possible.	SANS 10103	Mitigation	Duration of construction phase	HSE Manager
	Traffic	Increase in road congestion along the R31.	Access routes for construction vehicles to the preferred site alternative, and haulage routes within the site	Best practice	Minimisation	Prior to start of construction phase	Site Foreman

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			boundaries must be identified and agreed by all parties, including the ECO, at the outset of construction. Construction vehicles are not permitted to use residential roads. Construction vehicles travelling to site must adhere to the road's speed limit, while vehicles on site must adhere to the speed limit of 20km/hr.				
	Basic Services: Potable Water	Impact of an increase in pressure on potable water supply	Water tankered to site or borehole water is to be used for construction and dust suppression. Where possible, surfactants should be used for dust suppression to reduce water usage. Potable water is to be used for domestic purposes only.	Best practice	Minimisation	Prior to start of construction phase	Site Foreman
	Basic Services: Sanitation	Impact of an increase in pressure on sewage treatment facilities	Ablution facilities must be fitted with low flow fixtures. Sewerage must be transported by a licenced contractor to the Rietfontein Oxidation Ponds for treatment and disposal	Best practice	Minimisation	Prior to start of construction phase	Site Foreman
	Basic Services: Solid waste	Impact of an increase in pressure on waste disposal facilities.	The waste management hierarchy approach will be used, where practically and technically possible, when facilities are available in the Northern Cape. This may include separate bins for the separation of mainline recyclables (i.e., plastics,	Best practice	Minimisation	Duration of construction phase	HSE Manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			paper, glass, and cans/tins) from the general waste stream. Where possible, mainline recyclables will be transported to a licensed recycler for recycling. Residual general waste must be transported to the Rietfontein Landfill for disposal. Separate containers must be provided onsite for the separation of oils/greases from the hazardous waste stream. Oils/greases should be transported to a licensed facility, preferably a recycler. Residual hazardous waste must be transported to a licenced hazardous waste disposal facility for disposal.				
	Livelihoods	The entire site footprint of 10 ha solar PV and BESS, and 15mx15m tower sites will be cleared of vegetation.	To limit the development footprint as far as possible to reduce the loss of access to grazing land.	Best practice	Avoidance	Pre-construction	Engineering manager
	Health and safety	With an increase in road traffic, an in particular heavy-duty vehicles, there is the increased risk of road traffic death or serious injury.	All fleet vehicles (Eskom and contractors) must adhere to the speed limits which must be strictly enforced. Develop and implement a road safety awareness campaign targeting schools in Rietfontein, Klein Mier, Groot Mier and Askham. Erect warning signs on the R31 at	Best practice	Minimisation	During the construction phase	HSE manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			major pedestrian crossing points.				
	Health and safety	With an increase in the number of people living and working in the region, there is the risk of an increase in the spread of communicable diseases.	All Eskom employees and contractors must attend induction, which includes information on preventing the spread of communicable diseases. All Eskom employees and contractors must sign a code of conduct which strictly condemns behaviours that contribute to the spread of communicable diseases Develop and implement an awareness raising campaign targeting schools in Rietfontein, Loubos, Klein Mier, Groot Mier, Andriesvale, and Askham. Awareness campaign must include information on preventing the spread of communicable diseases	Best practice	Minimisation	At the start of the construction phase	HSE manager
	Health and safety	With an increase in the number of people living and working in the region, there is the risk of an increase in anti-social behaviours	All Eskom employees and contractors must attend induction. Induction must include information on anti-social behaviours. All Eskom employees and contractors must sign a code of conduct which strictly condemns anti-social behaviours. Develop and implement an awareness raising campaign targeting schools in Rietfontein, Loubos, Klein Mier, Groot Mier, Andriesvale, and Askham. Awareness campaign must provide information on anti-social behaviours.	Best practice	Minimisation	At the start of the construction phase	HSE manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			Develop and implement a mechanism to address the grievances of people from the Mier Community and ǂKhomani San with respect to anti-social behaviours.				
	Livelihoods	Risk that Eskom's SLO may be negatively affected if the local community's expectations, with respect to local jobs and business opportunities, are not being met.	Quarterly meetings with key representatives from the Mier community and ǂKhomani San. Identify jobs that can be undertaken by people from Rietfontein and nearby villages, based on the skills register obtained from the DKLM. Set targets for local jobs in consultation with key representatives from the Mier community and ǂKhomani San. Include local employment targets in tender documents. Identify goods and services that can be procured locally. Set targets for local procurement in consultation with key representatives from the Mier community and ǂKhomani San. Include local procurement targets in tender documents. Identify and implement CSI initiatives in consultation with key representatives from the Mier community and ǂKhomani San.	Best practice	Minimisation	At the start of the construction phase	HSE manager
	Livelihoods	Risk that Eskom's SLO may be negatively affected	Quarterly meetings with key representatives from the Mier community and ǂKhomani San.	Best practice	Minimisation	At the start of the construction phase	HSE manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
		if the local community's expectations, with respect to education, skills training, and skills development opportunities, are not being met.	Identify education, skills training, and skills development opportunities in consultation with key representatives from the Mier community and ǂKhomani San. Include education, skills training, and skills development targets in tender documents. Identify and implement CSI initiatives in consultation with key representatives from the Mier community and ǂKhomani San.				
	Livelihoods	With an increase in the number of people living and working in the region from other areas, there is the risk that the cultural integrity of indigenous people may be compromised.	All Eskom employees and contractors must attend induction. Induction must include information on indigenous people's culture and behaviours All Eskom employees and contractors must sign a code of conduct which strictly upholds the culture of indigenous people. Develop and implement a mechanism to address the grievances of people from the Mier community and ǂKhomani San with respect to upholding the culture of indigenous people.	Best practice	Minimisation	At the start of the construction phase	HSE manager
	Archaeological heritage resource	Disturbance, damage or destruction of archaeological remains.	Sampling and collection of archaeological resources must be undertaken. A permit to collect archaeological remains must be requested from the SAHRA.	Best practice for archaeological fieldwork & SAHRA requirement	Minimisation	Ongoing during construction phase. Following alert from ECO	Archaeologist ECO &

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			In the event of human burials being uncovered during construction activities, work in the immediate area must be halted. The find will need to be reported to the SAHRA and will require inspection by a professional archaeologist. Burials must not be removed until inspected by the archaeologist.				Archaeologist Archaeologist
	Palaeontological heritage resource	Disturbance, damage or destruction of legally-protected fossil heritage within the development footprint.	Monitoring or all major site clearance and excavation work for fossil remains. Substantial well-preserved fossils (stromatolites, vertebrate bones, teeth etc.) to be safeguarded, preferably in situ, and immediately reported to SAHRA. Fossil recording and sampling.	Best practice for palaeontological fieldwork.	Minimisation	Ongoing during construction phase. Following alert from ECO	ECO
Construction & Operational phase							
	Visual Resource	Dust generation during vegetation clearance and construction activities	Water down construction roads and large bare areas as frequently as is required to minimise airborne dust; Place a sufficiently deep layer of crushed rock or gravel at vehicle and machinery parking areas; Apply chemical dust suppressants if deemed necessary.	N/A	Minimisation	During construction phase	Project manager
	Visual	Reduction in visual	Potential Architectural Measures	N/A	Minimisation	During	Project / Facility

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Resource	resource value due to presence of solar PV blocks, BESS and associated infrastructure	To reduce the visual intrusion of built infrastructure, wherever possible: Material used for on-site infrastructure should not be white or shiny (e.g., bare galvanised steel that causes glare); Construct and/or paint infrastructure in colours that are complementary to the surrounding landscape, such as light grey, grey green, blue grey, dark buff, rust, ochre variations of tan; and Utilise construction materials that have matt textures where possible. <u>General Site Management</u> Maintain the construction site in a neat and orderly condition at all times; Create designated areas for material storage, waste sorting and temporary storage, batching and other potentially intrusive activities; Limit the physical extent of areas cleared for material laydown and vehicle parking as much as possible, and rehabilitate these area as soon as is feasible; Repair unsightly and ecologically detrimental erosion to steep or bare slopes as soon as possible, and re-vegetate these areas using a suitable mix of indigenous grass species; and Retain existing shrubs/trees wherever possible, as they already provide valuable screening.			construction and operational phases	manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Visual Resource	Reduction in visual resource value due to presence of telecommunications tower and associated infrastructure.	See above recommendations for solar PV blocks, BESS and associated infrastructure.	N/A	Minimisation	During construction and operational phases	Project / Facility manager
	Visual Resource	Light pollution at night	Utilise security lighting (if feasible) that is movement activated rather than permanently switched on, to prevent unnecessary constant illumination; Plan the lighting requirements of the facilities to ensure that lighting meets the need to keep the site secure and safe, without resulting in excessive illumination; Reduce the height and angle of illumination from which floodlights are fixed as much possible while still maintaining the required levels of illumination; Identify zones of high and low lighting requirements, focusing on only illuminating areas to the minimum extent possible to allow safe operations at night and for security surveillance Avoid up-lighting of structures by rather directing lighting downwards and focussed on the area to be illuminated; and	N/A	Minimisation	During Operational phase	Project manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			Fit all security lighting with 'blinkers' or specifically designed fixtures, to ensure light is directed downwards while preventing side spill. Light fixtures of this description are commonly available for a variety of uses and should be used to the greatest extent possible.				
Operational phase							
	Bats and other nocturnal mammals	Security lighting disturbing bats and other nocturnal fauna activity	Site lighting options should be managed to minimise effects on flying bats and other nocturnal fauna. Options that should be considered and applied where feasible include: Use of security lighting that is movement-activated rather than permanently switched on; Directional shading to prevent excessive light spillage; and Use of light bulbs that are not as attractive to insects (e.g., LED bulbs).	N/A	Minimisation	During operational phase	Facility manager
	Terrestrial Flora Communities	Establish and spread of alien invasive species	Active alien invasive species control should continue throughout the operational phase. Control actions should be informed by the findings of monitoring.	N/A	Minimisation	During operational phase	Facility manager
	Terrestrial Flora and Fauna Communities	Dust generation	Active dust suppression using suitable dust suppressant should be implemented during the operational phase, if required.	N/A	Minimisation	During operational phase	Facility manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Avifaunal	Collision Mortality (PV arrays)	An operational monitoring programme, that includes carcass searches to provide an indication of fatality rates as a result of collisions, and if there are any spatial, temporal or conditional patterns to the frequency of collisions. Most importantly, operational monitoring should highlight if mitigation (i.e. modifications to the panel design to reduce the illusionary characteristics of the panels) is required to reduce impacts to acceptable levels.	Best practice for avifaunal fieldwork	Minimisation	Post construction monitoring for ≥ two years of operation. Additional monitoring requirements determined following an assessment of data collected over two-years.	Environmental Manager & ECO
	Avifaunal	Mortality as a result of electrocutions on the 33kV power line infrastructure	The 33kV power line must be constructed using a bird friendly structure (i.e. Inverted Delta-T Structure - the same structure used for the existing Rietfontein feeder). Additional mitigation in the form of insulating sleeves on jumpers present on strain poles, terminal poles and box transformers should also be considered. Annual CNC maintenance monitoring to include power line surveys to evaluate electrocution mortality (if any) and assess the efficacy of mitigation measures.	Best practice for avifaunal fieldwork	Minimisation	Post construction monitoring for ≥ five years of operation. Additional monitoring requirements determined following an assessment of data collected over five-years.	Environmental Manager & ECO
	Avifaunal	Collision Mortality (33kV Power Line)	If collision impacts are recorded once the 33kV power line is operational It is recommended that the Eskom-	Best practice for avifaunal fieldwork	Minimisation	Post construction monitoring for ≥	Environmental Manager, ECO & Eskom-

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			Endangered Wildlife Trust Strategic Partnership investigate the mortalities and provide recommendations for site-specific mitigation to be applied reactively. Annual CNC maintenance monitoring to include power line surveys to evaluate collision mortality (if any) and assess the efficacy of mitigation measures.			five years of operation. Additional monitoring requirements determined following an assessment of data collected over five-years.	Endangered Wildlife Trust Strategic Partnership
	Avifaunal	Nest building on PV infrastructure	If on-going impacts are recorded once the solar PV and BESS site and telecommunication tower are operational, it is recommended that these impacts be assessed by the Eskom-Endangered Wildlife Trust Strategic Partnership and site-specific mitigation be applied reactively.	Best practice for avifaunal fieldwork	Minimisation	Nest management strategies identified and implemented reactively, if required.	Environmental Manager, ECO & Eskom-Endangered Wildlife Trust Strategic Partnership
	Basic services: Potable water	Impact of an increase in pressure on potable water supply.	Water tankered to site or borehole water is to be used for cleaning of PV modules. Potable water is only to be used for domestic purposes.	Best practice	Avoidance Minimisation	Duration of operational phase.	HSE Manager
	Basic services: Sanitation	Increase in pressure on sewerage treatment and disposal infrastructure	Ablution facilities must be fitted with low flow fixtures.	Best practice	Mitigation	Duration of operational phase.	HSE Manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Basic Services: Sanitation	Impact of an increase in pressure on sewage treatment facilities	If no onsite sewerage treatment system is available, sewerage must be transported by a licenced contractor to the Rietfontein Oxidation Ponds for treatment and disposal.	Best practice	Mitigation	Duration of operational phase.	HSE Manager
	Basic services: Solid waste	Impact of an increase in pressure on solid waste disposal facilities	The waste management hierarchy approach will be used, where practically and technically possible, when facilities are available in the Northern Cape. This may include separate bins for the separation of mainline recyclables (i.e., plastics, paper, glass, and cans/tins) from the general waste stream. Where possible, mainline recyclables will be transported to a licensed recycler for recycling. Residual general waste must be transported to the Rietfontein Landfill for disposal.	Best practice	Minimisation	Duration of operational phase.	HSE Manager
	Basic services: Solid waste	Increase in pressure on waste disposal facilities	Hazardous waste must be transported to a licensed hazardous waste disposal facility for disposal	Best practice	Minimisation	Duration of operational phase.	HSE Manager
	Health and Safety	Increase of the risk of overheating or flammable substance and/or gases being released from the battery technology	Sophisticated battery management systems to monitor cell performance and limit operations to safe and acceptable performance ranges. Prevent the misuse of the substance.	Best practice	Minimisation	Duration of operational phase.	HSE Manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Livelihoods	Risk that Eskom's SLO may be negatively affected if the local community's expectations, with respect to local jobs and business opportunities, are not being met.	Annual meetings with key representatives from the Mier community and ǂKhomani San. Identify jobs that can be undertaken by people from Rietfontein and nearby villages, based on the skills register obtained from the DKLM. Set targets for local jobs in consultation with key representatives from the Mier community and ǂKhomani San. Include local employment targets in operational requirements. Identify goods and services that can be procured locally. Set targets for local procurement in consultation with key representatives from the Mier community and ǂKhomani San. Include local procurement targets in operational requirements.	Best practice	Minimisation	Start and duration of operational phase.	Project Manager
Closure phase							
	Terrestrial Flora Communities	Establish and spread of alien invasive species	Active alien invasive species control should continue during the decommissioning phase and follow up control should be carried out for a five-year period following closure.	N/A	Minimisation	During closure and for a five-year period after closure	Facility manager
	Terrestrial Flora and Fauna Communities	Dust generation	The site should be actively rehabilitated using indigenous and locally sourced grass species. Seeding should be conducted prior to the first summer rains.	N/A	Minimisation / Rehabilitation	During closure phase	Facility manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Terrestrial Fauna Communities	General habitat restoration	Restoration/rehabilitation of the Project footprint should include consideration of compatible measures for habitat enhancement for bat species. Such measures include planting of native species trees and shrubs; and demarcation of rehabilitated areas as conservation areas only.	N/A	Minimisation / Rehabilitation	During closure phase	Facility manager
	Avifaunal	Displacement as a result of disturbance	Where possible decommissioning to occur outside of the Karoo Korhaan breeding season (September - February) to ensure minimal disturbance to the pairs that are resident both on site and in the immediate surrounds. Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. Measures to control noise should be applied according to current best practice in the industry.	Best practice for avifaunal fieldwork	Minimisation	Commencement until completion of the decommissioning phase.	Environmental Manager, ECO & Avifaunal specialist
	Visual Resource	Dismantling of all proposed solar PV blocks, BESS and associated infrastructure and subsequent rehabilitation of footprint areas	Dismantle and remove all visible surface infrastructure during decommissioning; Re-shape all footprint areas to be as natural in appearance as possible; Actively revegetate using grasses to establish a vigorous and self-sustaining vegetation cover.	N/A	Minimisation / Rehabilitation	During closure phase	Facility manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
	Visual Resource	Dismantling of all proposed telecommunications tower and associated infrastructure and subsequent rehabilitation of footprint areas	See above recommendations for solar PV blocks, BESS and associated infrastructure.	N/A	Minimisation / Rehabilitation	During closure phase	Facility manager
	Visual Resource	Visible dust plumes during rehabilitation	The site should be actively rehabilitated using indigenous and locally sourced grass species. Seeding should be conducted prior to the first summer rains.	N/A	Minimisation / Rehabilitation	During closure phase	Facility manager
	Dust	Negative impact of dust from demolition activities.	Where possible, limit demolition activities to the wetter months (January to April) when soil moisture content and vegetation cover is the greatest. Where possible, shelter (e.g., using shade clothe fencing) onsite sources of dust (e.g., soil stockpiles) to reduce wind speeds. Exposed surfaces and material stockpiles must be dampened periodically to avoid excessive dust. Where possible, surfactants should be used to reduce water usage. Limit speed of demolition vehicles to maximum 20 km/hr while onsite. Dust track-onto the R31 must be cleaned at the end of each day.	NEM: AQA (2004) National Dust Control Regulations (2013)	Avoidance Minimisation	Duration of closure phase	Site Foreman HSE Manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
			A complaints register must be kept at the site office or security office. All complaints about dust must be recorded in writing in the complaints register. Complaints must be addressed as soon as possible.				
	Noise	Negative impact of noise from demolition vehicles, equipment, and workers.	Demolition activities must be limited to daytime hours (06h00 to 18h00). No demolition activities are permitted on Sundays. People living nearby the preferred site must be notified in advance of any particularly noisy activities, such as jackhammers and blasting. Demolition vehicles and equipment that are excessively noisy due to poor maintenance are not permitted to be used onsite. A complaints register must be kept at the site office or security office. All complaints about noise must be recorded in writing in the complaints register. Complaints must be addressed as soon as possible.	SANS 10103	Minimisation	Duration of closure phase	HSE Manager
	Livelihoods	During the construction phase, the entire site footprint of 10 ha	Post-closure rehabilitation of the preferred site to grazing land.	Best practice	Rehabilitation	During the closure phase.	HSE Manager

Section No.	Category	Potential impact/risk	Mitigation Description	Prescribed standards or practices	Mitigation type	Time period	Responsible person
		will be cleared of vegetation.					
	Livelihoods	Risk that Eskom's SLO may be negatively affected if the local community's expectations, with respect to local jobs and business opportunities, are not being met.	All fleet vehicles (Eskom and contractors) must be fitted with telemetry and adherence to the speed limits strictly enforced. Develop and implement a road safety awareness campaign targeting schools in Rietfontein, Klein Mier, Groot Mier and Askham. Erect warning signs on the R31 at major pedestrian crossing points.	Best practice	Minimisation	During the closure phase	Project manager

5.0 ENVIRONMENTAL IMPACT STATEMENT

5.1 Summary of Impacts and Mitigation

Table 5 presents a summary of the potential impacts/risks associated with the proposed Project in the pre-construction, construction, operational, closure, and post-closure phases.

Table 5: Summary of potential environmental impacts/risks

Aspect	Potential impact/risk	Significance without mitigation	Significance with mitigation
Construction			
Terrestrial ecology	Habitat loss and modification – Study Area	High	Moderate
Terrestrial ecology	Habitat loss and modification – Telecommunications tower area	Low	Low
Terrestrial ecology	Establishment and spread of alien invasive species	Moderate	Low
Terrestrial ecology	Mortality and disturbance of fauna	Moderate	Low
Terrestrial ecology	Loss and disturbance of individual bats	Low	Low
Terrestrial ecology	Reduction in extent of foraging habitats for bats	Moderate	Low
Terrestrial ecology	Dust generation	Moderate	Low
Terrestrial ecology	Loss of flora of conservation concern	Moderate	Low
Socio-economic	Negative impact of dust from site clearance activities, earthworks, and materials handling.	Moderate	Moderate
Socio-economic	Negative impact of noise from construction vehicles, equipment, and workers.	Moderate	Low
Socio-economic	Impact of an increase in pressure on basic services.	Moderate	Moderate
Socio-economic: Indigenous people	Loss of vegetation of livelihood.	Moderate	Moderate
Socio-economic: Indigenous people	Increased risk of road traffic death or serious injury.	Moderate	Low
Socio-economic: Indigenous people	Increase in the spread of communicable diseases with more people living and working in the region.	Moderate	Low
Socio-economic: Indigenous people	Increase in anti-social behaviours with more people living and working in the region.	Moderate	Low
Socio-economic: Indigenous people	Risk that Eskom's SLO may be negatively affected if the local community's expectations, with respect to local jobs and business opportunities, are not being met.	Moderate	Low

Aspect	Potential impact/risk	Significance without mitigation	Significance with mitigation
Socio-economic: Indigenous people	Risk that Eskom's SLO may be negatively affected if the local community's expectations, with respect to education, skills training, and skills development opportunities, are not being met.	Moderate	Low
Socio-economic: Indigenous people	Risk that the cultural integrity of indigenous people may be compromised due to more people living and working in the region.	Moderate	Low
Palaeontological heritage	Disturbance, damage or destruction of legally-protected fossil heritage within the development footprint.	Low	Low
Archaeological heritage resource	Disturbance, damage or destruction of archaeological remains.	Moderate	Low
Construction & Operation			
Visual resource	Dust generation during vegetation clearance and construction activities	Moderate	Low
Visual resource	Reduction in visual resource value due to presence of solar PV blocks, BESS and associated infrastructure	Moderate	Moderate
Visual Resource	Reduction in visual resource value due to presence of telecommunications tower and associated infrastructure.	Moderate	Moderate
Visual Resource	Light pollution at night	Moderate	Low
Operational			
Terrestrial ecology	Security lighting disturbing nocturnal fauna	Low	Low
Terrestrial ecology	Establishment and spread of alien invasive species	Moderate	Low
Terrestrial ecology	Dust generation	Low	Low
Socio-economic	Increase in pressure on basic services.	Moderate	Low
Socio-economic: Indigenous people	Risk that Eskom's SLO may be negatively affected if the local community's expectations, with respect to local jobs and business opportunities, are not being met.	Moderate	Low
Closure			
Terrestrial ecology	Establishment and spread of alien invasive species	Moderate	Low
Terrestrial ecology	Dust generation	Moderate	Low
Visual Resource	Dismantling of all proposed solar PV blocks, BESS and associated	Positive	Positive

Aspect	Potential impact/risk	Significance without mitigation	Significance with mitigation
	infrastructure and subsequent rehabilitation of footprint areas		
Visual Resource	Dismantling of all proposed telecommunications tower and associated infrastructure and subsequent rehabilitation of footprint areas	Positive	Positive
Visual Resource	Visible dust plumes during rehabilitation	Moderate	Low
Socio-economic	Negative impact of dust on demolition workers and people living and working nearby the Project site	Moderate	Moderate
Socio-economic	Negative impact of noise on people living and working nearby the Project site.	Moderate	Low
Socio-economic: Indigenous people	Increased risk of road traffic death or serious injury.	Moderate	Low

5.2 Conditions to be Included in the EA

In addition to the impact mitigation measures presented in Section 4.0, it is recommended that the following conditions be included for the proposed Project:

- Terrestrial Biodiversity
  - A 10 m buffer should be demarcated around the sensitive ephemeral vegetation, with no project infrastructure demarcated around these areas, in order to protect the sensitive ephemeral vegetation from disturbance or degradation.
  - Significant residual impacts associated with the permanent loss of approximately 10 ha of natural habitat (Rhigozum trichotomum – Stipagrostis shrubland) need to be addressed through the implementation of additional conservation actions. These should include actively controlling alien invasive flora species (Prosopis species) around the farm dams that are located downstream of the study area, and implementing anti-erosion control measures (e.g., rock packs) at points susceptible to erosion.
- Avifaunal
  - During pre-construction inspection, and avifaunal walk-through of the proposed Project site layout, road and power line routes, and telecommunication tower site should be undertaken to identify Red List species that may be breeding within footprint of the sites road and power line servitudes to ensure that the impacts to breeding species (if any) are adequately managed.
  - Construction activities (i.e. all staff, vehicle and machinery) and access to the site should be restricted to the immediate footprint of the infrastructure to prevent unnecessary disturbance of avifaunal species.
  - The 33kV power line must be constructed using a bird friendly structure (i.e. Inverted Delta-T Structure - the same structure used for the existing Rietfontein feeder).

- Post construction monitoring to be conducted by Eskom as part of the yearly maintenance to evaluate mortalities and assess the efficacy of mitigation measures to the Project site and 33kV power line. This is to be reported to the Endangered Wildlife Trust Strategic Partnership to better inform requirements at the site and any future solar facility assessment and recommendations.
- A carefully considered operational surface water/drainage management plan must be developed for the site including attention to the use of environmentally friendly cleaning chemicals on the solar panels.

- Socio-economic
  - Uphold the cultural integrity of the indigenous people.
- Palaeontology
  - Should there be any chance fossil finds during the construction phase of the proposed Project, safeguarding of the fossils (preferably *in situ*) must be undertaken, the finds must be reported to SAHRA, and a qualified paleontologist contacted.
- Archaeology
  - Sampling and collection of Stone Age resources must be undertaken. For this, a permit to collect the archaeological remains must be requested from the SAHRA prior to construction. In addition, in the unlikely event of human burials being uncovered, they must not be removed, work in the immediate area must be halted, the area must be inspection by a professional archaeologist and the find must be reported to the SAHRA.

Signature Page

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APPENDIX A

Document Limitations

DOCUMENT LIMITATIONS

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