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REPORT:

SOLAR PHOTOVOLTAIC POWER PLANT – OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

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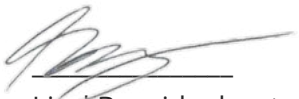

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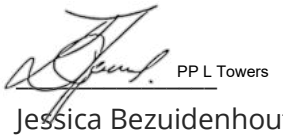

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ABBREVIATIONS

Abbreviation	Description
BESS	battery energy storage system
ECC	Environmental Clearance Certificate
ECC	Environmental Compliance Consultancy (Pty) Ltd
ECB	Electricity Control Board
ECO	Environmental control officer
EIA	Environmental impact assessment
EMA	Environmental Management Act, No. 7 of 2007
ha	Hectare(s)
ISO	International Organization for Standardization
kV	Kilovolt
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industries, Mines and Energy
MLIREC	Ministry of Labour, Industrial Relations and Employment Creation
MSDS	Material Safety Data Sheet
MW	Megawatt
MAFWLR	Ministry of Agriculture, Water and Land Reform
NBRI	National Botanical Research Institute
NHC	National Heritage Council
OEMP	Operational Environmental Management Plan
PPE	Personal Protective Equipment
PV	Photovoltaic
TA	Traditional Authority
Wh	watt-hour
WRMA	Water Resources Management Act, No. 11 of 2013
DWA	Department of Water Affairs
CCTV	Closed-Circuit Television

1 INTRODUCTION

1.1 BACKGROUND

Sorexa Sun Energy (Sorexa or the Proponent), a subsidiary of InnoSun Energy Holding Namibia (InnoSun), constructed Phase 1 (i.e. 9.8 megawatt (MW)) of the approved fifty (50) MW photovoltaic (PV) solar power plant, located close to Trekkopje Uranium Mine, Erongo Region, Namibia (Figure 1), to supply electricity through renewable energy sources. Phase 1 occupied approximately twenty (20) hectares (ha) of the total proposed 150 ha Project footprint, as shown in Figure 2. Additionally, a 5 MW/10 watt-hour (Wh) battery energy storage system (BESS) will be installed.

Activities associated with the construction and operations phase of the solar plant trigger the Environmental Management Act, No. 7 of 2007 (EMA) and specifically listed activities within the Act's associated Regulations of 2012. For this reason, an operational environmental management plan (OEMP), with numerous compliance criteria, was developed to support the renewal of the current environmental clearance certificate (ECC-220030). It is thus a legal requirement for all contractors and operational staff involved in the Project to comply with the OEMP.

The Project is closely located to a sensitive area where lithops can be found (Figure 2). Lithops are a protected plant species that is very difficult to see. Due to these factors, it is the responsibility of the Proponent as well as the contractors and subcontractors engaged in maintenance or mechanical repairs to ensure that operational and future construction activities are conducted at a safe distance to prevent any damage.

Listed below are the main Project components:

- Pile foundations;
- Solar panels and support structures;
- Inverters and step-up transformers; and
- 33 kilovolt (kV) underground cable.

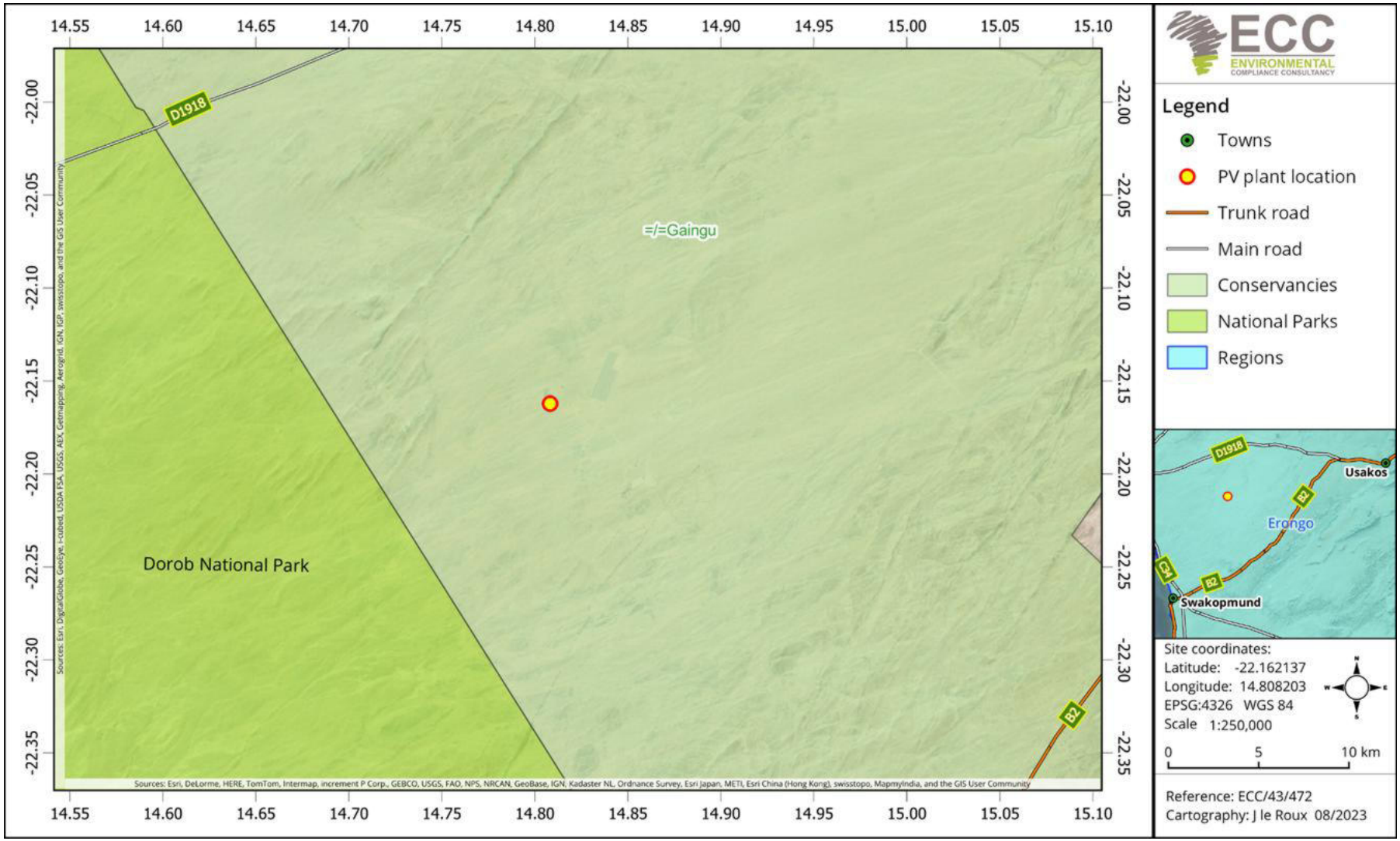

Figure 1 - Sorexa Sun Energy 50 MW solar power plant location

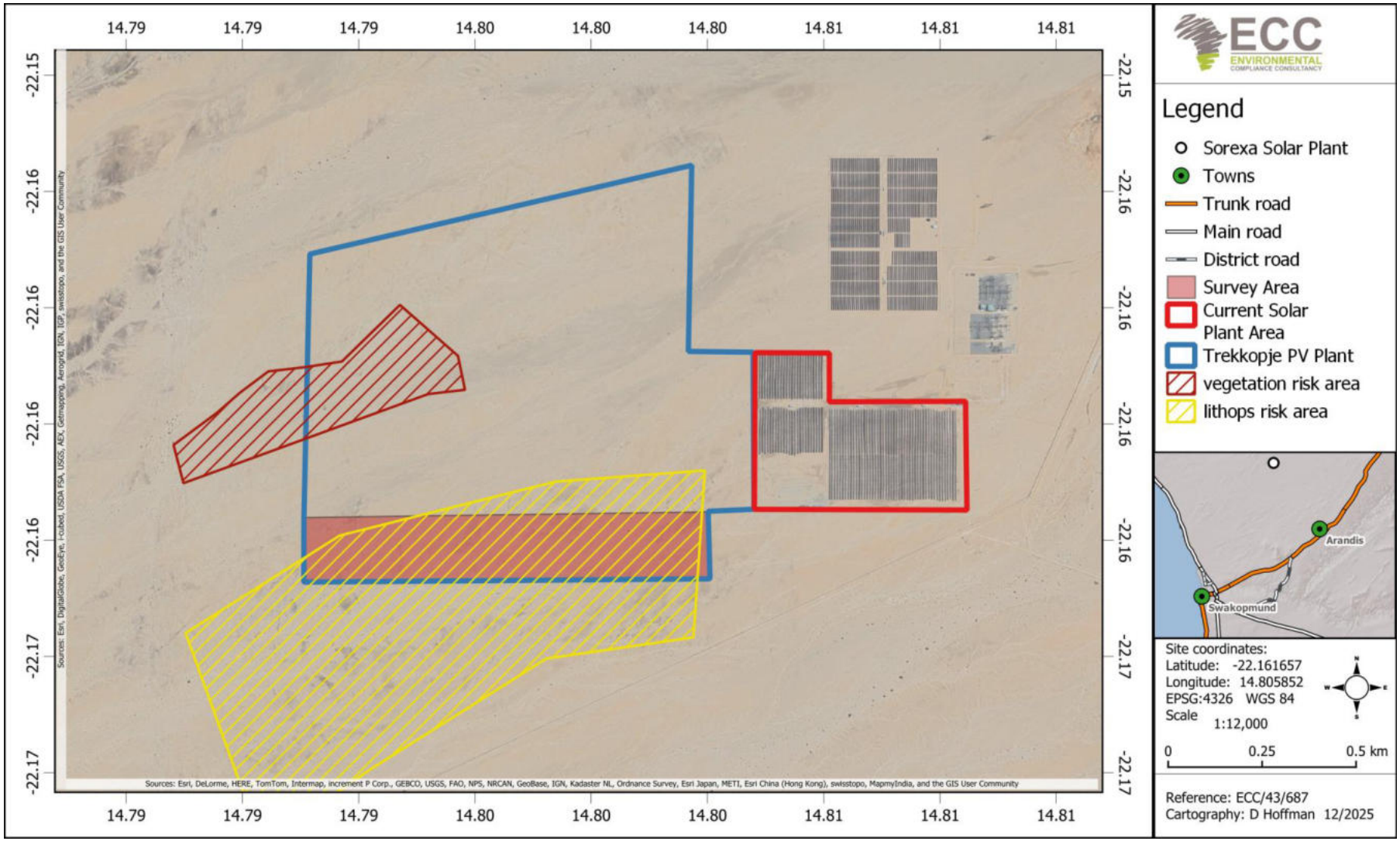

Figure 2 - Sensitive vegetation and lithops in relation to the total 150 hectare (ha) Project footprint

1.2 PURPOSE OF THE REPORT

The operational management plan (hereafter referred to as the OEMP) provides a logical framework, mitigation measures and management strategies for operations and maintenance activities associated with the Project, including any future construction phases and activities. This ensures that the potential environmental and social impacts are curbed and minimised as far as practically possible and that statutory and other legal obligations are adhered to and fulfilled. Outlined and defined in the OEMP are the protocols, procedures and roles and responsibilities to ensure that management requirements are effectively and appropriately implemented.

This OEMP is a live document and shall be reviewed at predetermined intervals and/or updated during the operational phase, when or if the scope of work alters (e.g. Project expansion), when further data or information is added or when there are legislative updates. All personnel working on the Project will be legally required to comply with the requirements set out in the final OEMP that is approved by the Ministry of Environment, Forestry and Tourism (MEFT) (competent authority).

The scope of this OEMP includes all activities associated with the operations and maintenance of the Sorexa PV solar power plant, including future construction related activities.

1.3 MANAGEMENT OF THIS OEMP

The Proponent (Sorexa) holds a valid environmental clearance certificate for the proposed 50 MW PV solar power plant with underground power lines/cabling. The implementation and management of this OEMP and the monitoring of compliance will be undertaken through daily duties and activities, as well as defined monthly, quarterly and annual or other periodic inspections, audits and/or monitoring surveys.

1.4LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS RELATED TO THIS OEMP

This OEMP does not include measures for compliance with statutory occupational health and safety requirements. This is managed by the Proponent's Occupational Health and Safety Plan, which is compliant with ISO 45001 standards and therefore not in the scope of this OEMP. Where there is any conflict between the provisions of this OEMP and any contractor's obligations under their respective contracts, including statutory requirements (such as permits/licences, Project approval conditions, standards, guidelines and relevant laws), the contract should be amended, and statutory requirements are to take precedence. The information contained in this OEMP has been based on the current valid environmental clearance certificates and associated management plans. If and where operational requirements are changed, this OEMP may require updating and/or potential further assessment to be undertaken.

1.5 ENVIRONMENTAL ASSESSMENT PRACTITIONER

The report has been prepared by Environmental Compliance Consultancy (Pty) Ltd (ECC) (Reg. No. 2022/0593) on behalf of the Proponent. Authorised by ECC employees with no material interest in the report's outcome, ECC maintains independence from the Proponent and has no financial interest in the Project apart from fair remuneration for professional fees. Payment of fees is not contingent on the report's results or any government decision. ECC members or employees are
not, and do not intend to be, employed by the Proponent, nor do they hold any shareholding in the Project. Personal views expressed by the writer may not reflect ECC or its client's views. The OEMP's information is based on the best available data and professional judgment at the time of writing. However, please note that environmental conditions can change rapidly, and the accuracy, completeness or currency of the information cannot be guaranteed.

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2 ENVIRONMENTAL MANAGEMENT FRAMEWORK

2.1 OBJECTIVES AND TARGETS

This OEMP provides measures, guidelines and procedures for managing and mitigating potential environmental and social impacts. The OEMP also outlines monitoring and reporting guidelines and assigns responsibilities to those carrying out management and mitigation measures, aligned with construction, operations and decommissioning activities. Environmental objectives have been developed so that the construction and operations of the solar power plant can minimise potential environmental impacts as far as reasonably practicable.

Environmental objectives for Sorexa are as follows:

- Zero pollution incidents;
- Minimal vegetation clearing and earthworks;
- Minimal impact on regional groundwater users;
- Manage waste efficiently and reduce the potential for environmental pollution;
- Protect local flora and fauna; and
- Use natural resources effectively and efficiently.

2.2 PERMITS, LICENCES AND RELEVANT LEGAL PROVISIONS

The relevant certificates, permits and consents required for the Project are outlined in Table 1.

Table 1 - Relevant legislative permits, licences and consents for the Project

Topic	Legislative instrument	Management requirements
Archaeology/heritage	National Heritage Act, No. 27 of 2004	All protected heritage resources (e.g. human remains, artefacts, etc.) discovered need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
Effluent discharge or Sewage Permits	Water Resources Management Act No.11 of 2013 and Water Resources Management Regulations No. 269 of 2023.	Licences related to the sewage systems or effluent discharge should be obtained (where applicable). Part 13 (sections 68 - 72) of the Water Resources Management Act No.11 of 2013 and Part 8 (Sections 66 - 68) of the Water Resources Management Regulations (No. 269 of 2023).
Electricity	Electricity Act, No.4 of 2007	A licence is required for the generation and trading of electricity from the Electricity Control Board (ECB).

Topic	Legislative instrument	Management requirements
Environmental	Environmental Management Act, 2007 (Act No. 7 of 2007) and the EIA Regulations GN 57/2007 (GG 3812)	The amendment, transfer or renewal of the environmental clearance certificate.
Forestry	Forest Act, No. 12 of 2001 and the Nature Conservation Ordinance No. 4 of 1975	Protected tree species and any vegetation within 100 m of a watercourse may not be removed without a permit. A harvesting permit is required if wood is to be collected (harvested) for use as fuel.
Labour	Labour Act, No. 11 of 2007 and Health and Safety Regulations (HSR) GN 156/1997 (GG 1617)	Adhere to all applicable provisions of the Labour Act and the Health and Safety regulations.
Land lease	Communal Land Reform Act (2003)	A Lease Agreement is required to be signed with the relevant Traditional Authority (TA) and conservancy management committee.

2.3 ROLES AND RESPONSIBILITIES

The responsibility for implementing the OEMP ultimately lies with Sorexa. The implementation of the OEMP requires the involvement of several stakeholders during the operational, construction and decommissioning phases. The Proponent will ensure a competent team is in place to oversee and undertake operational activities, which comprises of contractors and their subcontractors.

The Proponent shall be responsible for:

- Ensuring that all members of the operational team and contractors comply with the procedures set out in this OEMP;
- Ensuring that all persons are provided with sufficient training, supervision and instruction to fulfil this requirement;
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood; and
- Contractors shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this OEMP and meet the responsibilities listed above.

Table 2 lists the roles and responsibilities allocated to different management levels in the company and specific personnel.

Table 2 - Roles and responsibilities

Role	Responsibility
The Proponent (Sorexa)	- Responsible for overall safe and efficient solar plant operations; - Ensure implementation of the operation OEMP and all licence/permit conditions (environmental clearance certificate, generation licence, land-use agreements, etc.) with assistance from the ECO; - Oversee performance monitoring and reporting (generation data, availability and downtime); - Coordinate with NamPower/ErongoRED or buyers on dispatch, outages and grid interactions; and - Lead emergency response and ensure drills and documentation are up to date.
Operations, maintenance and asset management team	- Ensure adequate housekeeping and that facilities on site are hygienic and in good working condition; - Ensure solar panels are cleaned when required; - Ensure alarms, switch gears and transformers are working; - Record waste removal from the site; and - Record environmental incidents.
Environmental control officer (ECO)	- Implement and monitor compliance with OEMP commitments and environmental procedures. - Conduct environmental monitoring (waste, water, dust, noise, biodiversity, occupational environment); - Inspect site for compliance (spill prevention, waste segregation, housekeeping, hazardous storage, etc). - Compile monthly/quarterly/annual environmental reports for the submission to the Proponent, to the competent authority (MEFT) and for the environmental clearance certificate renewal process. - Liaise with MEFT and local authorities on environmental issues. - Maintain records (MSDSs, training logs, waste manifests, incident reports); - Provide expert advice to the Project team on environmental matters.
Security personnel	- Monitor and control site access (visitors, contractors, deliveries etc.); - Perform site patrols and report suspicious activity; - Ensure perimeter fencing, closed circuit television (CCTV), and alarm systems remain operational; - Maintain visitor and contractor access records; and

Role	Responsibility
	- Adhere to the requirements and regulations outlined in this OEMP.

2.4 CONTRACTORS AND SUBCONTRACTORS

Contractors and their subcontractors contracted by the Proponent for any construction, mechanical or maintenance repairs during the operational phase and future construction must be compliant with this OEMP and shall be responsible for the following:

- Undertake activities in accordance with this OEMP, as well as relevant policies, procedures, management plans, method statements, licences and contract obligations;
- Implement effective environmental and safety management measures;
- Adopt environmental best practices to ensure the preservation of the receiving environment and minimise potential environmental impacts to the greatest extent possible;
- Report environmental issues, including actual or potential environmental incidents and aspects;
- Cooperate fully with environmental inspections, audits and monitoring activities conducted by the maintenance and operational team of InnoSun or an appointed company;
- Ensure that employees under their employment are made aware of, and comply with the requirements of the OEMP; and
- Ensure that appropriate corrective or remedial actions are implemented to address all environmental aspects and incidents. Lessons learnt should always be documented for future reference and continuous improvement.

2.5 WORKFORCE COMPETENCY

All personnel shall be competent to perform tasks that have the potential to cause an environmental impact. The Proponent must comply with the Republic of Namibia's Regulations for Labour, Health and Safety and any subsequent amendments to these Regulations. The following conditions, amongst others must be complied with:

- All personnel shall be provided with the necessary and appropriate personal protective equipment (PPE) (i.e. overalls, safety boots and proper uniform);
- Should foreign workers be hired, the Proponent shall ensure that they have valid work permit(s) at all times;
- Regular refresher training courses shall be conducted to reinforce health and safety and environmental responsibilities; and
- All personnel, contractors and sub-contractors shall undergo an induction course covering environmental awareness, occupational safety procedures and site-specific risks and impacts before commencing with work.

2.6 EMPLOYMENT

The Proponent should compile a document to be used as a guide for recruitment, to include the following:

- Ensure that their recruitment mechanisms prioritise local people;
- Job adverts must clearly state the skills and required qualifications;
- The maximum expected duration of the job, whether temporary or permanent, shall be indicated;
- Foreign workers with no proof of permanent legal residence and work permit shall not be hired; and
- All employees hired must be issued valid employment contracts specifying their position, assigned duties and hourly remuneration (in accordance with the wage standards stipulated in the Wage Order Setting the National Minimum Wage for Employees (Government Notice 218 of 2024).

3 COMMUNICATION AND AWARENESS

To ensure potential environmental impacts are minimised, it is important that personnel are appropriately informed and briefed on how to properly implement the OEMP. It is also important that regular communication is maintained with stakeholders and regulatory authorities. This section outlines the framework for communication related to the implementation of the commitments that are specified in this OEMP.

3.1 INTERNAL COMMUNICATION

The maintenance and management teams shall communicate site-wide environmental issues through the following means (as and when required):

- Site notices;
- WhatsApp group (or preferred social communication mobile application tool);
- Daily, weekly and monthly briefings;
- Instructions on incident response procedures; and
- Briefing on key environmental issues.

This OEMP shall be distributed to operation and maintenance teams, asset management and on-site personnel (including contractors and subcontractors, when hired for any maintenance, mechanical repairs, etc.) to ensure that the environmental requirements are adequately communicated. The key activities and environmentally and socially sensitive operations must be highlighted clearly to workers and contractors, in English and their local language, where required.

Effective communication must be maintained and should include procedures for receiving, logging and resolution of complaints, the non-conformances with this OEMP observed and remediation/corrective actions required.

3.1.1 TRAINING AND ENVIRONMENTAL AWARENESS

Personnel must be competent to perform tasks to avoid potential negative environmental impact. Competence is defined in terms of appropriate education, training and work experience. When it has been determined that certain skills are lacking, training and refresher courses must be offered to the workforce. The management teams must ensure records of these training sessions are always kept on-site and filed.

3.2 EXTERNAL COMMUNICATION

The asset management team shall represent the Proponent and shall liaise with external regulatory authorities, surrounding communities and community representatives. This will ensure good working relations with the stakeholders and compliance with all relevant policies, regulations, approved licences, certificates and permits.

3.2.1 ENVIRONMENTAL EMERGENCY AND RESPONSE

An emergency is any abnormal event, which demands immediate attention. It is any unplanned event, which results in the temporary loss of management control at a site, but where functional resources can manage the response. An emergency response plan must be in place by the Proponent that manages the response in relation to emergencies, including environmental emergencies. Table 3 provides the emergency response numbers for Arandis and Swakopmund.

Table 3 - A list of emergency contact details

Town	Water and sewage	Ambulance	Police	Fire brigade
Arandis	+264 (64) 51-0171	+264 (64) 51-0022	+264 (64) 1 0111	+264 (64) 51-0171
Swakopmund	+264 (64) 410 4279 +264 (0) 81 128 4998 (after hours)	+264 (64) 40 5731	+264 (64) 1 0111	+264 (64) 410 4111

Should there be large-scale spills (i.e. >200 litres) of fuel, wastewater, domestic effluent or other contaminated fluids with the potential to adversely impact the environment, including spills into any river course or tributary, the relevant authorities must be notified. This includes informing the Ministry of Industries, Mines and Energy (MIME) by completing form PP/11 (telephone: +264 61 284 8111), the Offices of the Ministry of Environment, Forestry and Tourism (MEFT; +264 61 284 2111), the Ministry of Agriculture, Water and Land Reform (MAFWLR; +264 61 205 3021), and the Department of Water Affairs (DWA), which must be promptly informed in the event of large-scale domestic effluent spills into any river course or tributary river.

3.2.2 COMPLAINT HANDLING AND RECORDING

Any complaints received verbally by any personnel shall be recorded by the receiver, including:

- The name of the complainant;
- The contact details of the complainant;
- Date and time the complaint was received; and
- The nature of the complaint.

The information shall be provided to the Proponent management teams, who are overall responsible for managing complaints. Complaints should be addressed by following these measures:

- Record the complaint in the complaint register; and
- Provide a written response to the complainant of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons why are to be recorded in the register.

The management team shall be informed about the complaints register, its location and the person responsible, to refer tourists or the public who wish to lodge a complaint. The complaints

register shall be kept for the duration of the Project and must be available for government or public review, upon request.

4 REPORTING, COMPLIANCE AND ENFORCEMENT

4.1 Environmental performance management

This section outlines the overall monitoring commitments required for implementation during the operational and decommissioning phase of the Project. It details procedures to ensure routine inspections and audits are conducted to ensure that operational and any other construction activities are aligned and remain compliant with this OEMP.

4.2 Operational phase: environmental inspections and compliance monitoring

An audit and inspection program must be in place to ensure effective operational performance. For example, the wastewater treatment facility (i.e. septic tanks), its drainage systems and water metering systems must be inspected and monitored accordingly based on a defined schedule (daily or weekly inspections) and reporting as per licence requirements. This will ensure leakages and potential groundwater contamination are detected and addressed promptly. The operations and maintenance team will conduct these routine inspections.

The operations, maintenance and asset management team will conduct regular inspections of all infrastructure and work areas to ensure compliance with operational specifications and identify any signs of wear, damage or deterioration. Any non-conformance will be recorded, including the following details: a brief description of non-conformance; the reason for the non-conformance; the responsible party; the result (consequence); and the corrective action(s) taken and any necessary follow up measures required.

4.3 Reporting

All incidents or non-compliances, including environmental issues, wildlife crimes, failure of equipment or accidents, are to be reported to the Proponent's asset manager throughout the Project's lifecycle. MEFT reserves the right to require the Proponent to submit bi-annual reports evaluating the Project's compliance with the commitments that are outlined in this OEMP.

For large-scale spills (i.e., > 200 litres) and other significant environmental incidents, the fire service should be notified as required and the MEFT office should be informed of the incidents (telephone +264 61 284 2111). If the spillage is of a fuel source (i.e. petrol/diesel), MIME must be notified by completing form PP/11 (telephone: +264 61 284 8111).

If significant environmental spills (hydrocarbons or domestic effluent) occur close to or in water drainage systems, the DWA is to be notified. All correspondence with DWA must be done by the asset management team no later than 48 hours after the incident has occurred. All correspondence with the relevant ministries should be handled by the asset management team.

For the clean-up of smaller spills, the relevant material safety data sheet (MSDS) should be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

Occupational incidents and accidents incurred by staff during operations must be reported to the authorities (i.e. Occupational Safety & Health Department) at the Ministry of Labour, Industrial Relation and Employment Creation (MLIREC), by using form F.5.

In case of archaeological objects or heritage artefacts are discovered on-site, the chance find procedure (Appendix A) must be followed and the NHC must be informed by the asset management team.

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT

5.1 ENVIRONMENTAL PERFORMANCE MANAGEMENT

Table 4 and Table 5 provide the overall management plan of potential impacts during the operational (including maintenance), possible future construction and decommissioning phases. These plans provide mitigation and monitoring commitments, as well as the roles responsible for execution. The asset management team and appointed supervisor(s) or ECO will use the operational management plan to undertake daily, weekly and monthly inspections to ensure the Project remains compliant with this OEMP during operations and to manage any ad hoc activities.

This OEMP has been revised and updated to provide clear guidance to the Project personnel and any appointed contractor and subcontractor throughout the operational and decommissioning phase. Specifically, it covers:

- **Operational phase (current phase)**: the day-to-day management of the Project and its associated activities, including mechanical and maintenance activities; and
- **Decommissioning phase (future phase):** the systematic cessation of Projects operations, including the implementation of appropriate after-care measures following cessation of Projects operations.

The OEMP is also relevant to any future construction that might occur during the life to this Project.

5.1.1 OPERATIONAL PHASE

This section outlines the management, mitigation and monitoring measures to be implemented during the daily operation and management of the solar power plant and its associated activities. To ensure all operational and construction activities should be guided by the following principles:

- To manage operations and activities in ways that minimise disturbance to the surrounding natural environment;
- To encourage and enforce environmentally responsible behaviours;
- To prioritise the conservation of the natural environment by integrating sustainable practices into all aspects of operations;
- To foster partnership with community stakeholders to jointly manage natural resources and conservation initiatives; and
- To actively collaborate with regulatory authorities and stakeholders by maintaining open communication and ensuring full compliance with all approved certificates, licences and their conditions.

The specific environmental management measures and monitoring requirements required for implementation during the operational phase are discussed in Table 4.

Table 4 – Environmental aspects, management and mitigation measures for the operational phase (including maintenance and future construction activities)

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
Environmental awareness	- Environmental grievances and misconducts are due to a lack of awareness.	- Keep environmental policies and guidelines on file; - Ensure environmental awareness posters are displayed across site; - Ensure the OEMP is revised as required to align with the provisions outlined in environmental policies, regulations and their amendments thereof; - Ensure staff and contractors are inducted on environmental matters and receive regular training to ensure they understand the requirements of the OEMP; - Ensure roles and responsibilities of various staff members are clearly defined in their job descriptions.	- Ad hoc
Corporate social responsibility and stakeholder engagement	- Good community relations.	The Proponent should draft a communication plan which should outline the following as a minimum: - How stakeholders, who require ongoing communication for the duration of operations and any future construction, will be identified and recorded and who will manage and update these records; - How these stakeholders will be consulted on an ongoing basis; and - Make provision for grievance mechanisms – i.e. how concerns can/ will be recorded and how feedback will be delivered, as well as further steps of arbitration in the event feedback is deemed unsatisfactory.	- Ad hoc
Water management	- Improper water usage.	- Develop a water management plan; - Ensure that water volumes used for cleaning PV panels are recorded;	- Daily - Weekly - Monthly

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- Considering alternative sources of cleaning if the water usage agreement with Trekkopje Mine exceeds the agreed-upon volumes; - Natural drainage lines are to be avoided at all costs to ensure water from rainfall follows it natural path to the existing vegetation; and - Ensure employees, contractors and sub-contractors are supplied with potable water compliant with the standards of the Water Resources Management Act, 2013 (No. 11 of 2013).	- Annually
Handling, storage and dispensing of hydrocarbon containers, maintenance of equipment, machinery and vehicles	- Soil contamination. - Visual nuisance. - Surface and groundwater contamination.	**Hydrocarbon management requirements:** - Maintain good housekeeping; - All vehicles, equipment and machinery must be serviced regularly; - All fuel and chemical containers must be stored on an impervious base, be bunded and capable of containing at least 110% of the total capacity of the storage container; - All fuel and chemical storage containers must be placed on stable ground to prevent them from tipping over or a spillage; - Fully stacked appropriate spill kits are to be kept on-site; and - MSDSs are to be kept for each chemical used on-site. These must be accessible to all personnel and personnel must be trained therein. **Spill response measures:** The following measures are to be implemented in response to a spill: - Spills are to be stopped at the source as soon as possible; - Spilled material is to be contained to the smallest area possible using a combination of absorbent materials, earthen bunds or containment methods;	- Daily - Weekly - Monthly - Annually

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- Spilled material is to be recovered as soon as possible using appropriate equipment. In most cases, it will be necessary to excavate the underlying soil until clean soil is encountered; - Recovered contaminated soil must be disposed to an appropriate disposal facility; - Management is to be informed as soon as possible in the event of a spill; - A written incident report must be submitted MIME for significant spillages; and - Large hydrocarbon spills (i.e. > 200 L) must be reported immediately to MEFT and DWA if it enters any drainage lines. If the spillage is of a fuel source (i.e. petrol/diesel), the MIME must be notified by completing form PP/11 (telephone: +264 61 284 8111).	
Biodiversity management	- Interaction with biodiversity. - Potential introduction and spread of alien or invasive species. - Poaching, - Bird collision/nesting into/within the solar power plant.	The Nature Conservation Ordinance Act, No. 4 of 1975 and its Regulations, Controlled Wildlife Products and Trade Act, No. 9 of 2008 and the Animal Protection Act, No. 71 of 1962 must be closely followed with regard to any encounters with wildlife within the site boundaries. In addition to this, the following measures must be complied with: **Vegetation:** - Incorporate indigenous plants into the landscaping and ornamental design and ensure that no alien invasive species are introduced; - Off-roading is strictly prohibited. Movements should be restricted to approved roads and walking trails; - The use of pesticides is strictly prohibited. Mechanical pest control methods should be used instead;	- Daily - Weekly - Monthly - Annually

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- Implement a high efficiency system for cleaning of the panels; - Prevent erosion from water flowing off the panels; - Control the growth of alien invasive plant species (monitor and remove these species); and - Special care should be taken as to not damage lithops should future construction take place. **Biodiversity survey 2025 recommendations:** - Prevent disturbances to shallow washes as far as reasonably possible; - Prioritise conservation of protected, near-endemic and endemic species; - Protect and prevent the removal of *Commiphora* sp. and other trees; - Where it cannot be protected, undertake/commission rescue and/or relocation missions (NBRI, etc); - Limit the removal of woody species; and - Conduct ecological walk throughs prior to construction, especially in the area marked as the Lithops risk zone. Preferably after seasonal precipitation when Lithops are potentially in flower. **Wildlife:** - Domestic pets are not permitted on site; - Feeding wild animals or deliberately interacting with them is strictly prohibited; - Construction activities to be limited to the actual footprint of the solar power plant area; - Off-road driving is strictly prohibited;	

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- Capture, possession and consumption of animals are strictly prohibited; - Wild animals encountered on-site should be captured and relocated (including snakes and lizards); - Set site specific speed limits (ideally 40 km/h) and ensure that appropriate road signages are clearly erected; and - Wildlife incidents (injury to or death of animals) must be recorded. **Avifauna:** - A monitoring programme is to be developed to monitor the potential impacts of avifauna collisions with the solar plant panels; - Should the monitoring results show that such impacts, including injuries and/or mortalities of birds are taking place, mitigation measures would need to be investigated, if necessary, on a species-specific basis; - These mitigations could include minor modifications of the panel design, in order to reduce the illusory characteristics of these structures; - The solar plant should be fenced with jackal-proof fencing to reduce indirect predation of any bird collision species (if injured and still alive), attraction for the creation of dens, and also to prevent the removal of any carcass material before it is recorded; - Security lighting should be kept to the minimum and directed downward and away from the panels if possible; - The panels themselves should not be directly illuminated;	

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- If numerous bird carcasses are found around the modules/solar arrays, investigate and implement relevant management and mitigation measures to avoid/reduce further impacts; - In addition to formal carcass searches, operational staff should report bird mortalities through the formal incident reporting system; - Maintain records of avifauna and monitor new species on or beneath the solar panel structures; - Should any negative impacts occur, mitigation measures to be implemented to address these impacts; and - Bird nesting activities should be discouraged early in the cycle, before any eggs are laid.	
Small civil works	- Littering - Noise nuisance - Occupational safety risks	- Civil works such as concrete mixing should be undertaken at a designated concrete bay; - Prevent runoffs from the areas of operation; - Collect and remove all debris and surplus materials upon completion of work; - Limit noisy activities to designated working hours (i.e. 07:00 am – 17:00 pm); - Train staff in safe handling of tools, equipment and machinery and on emergency procedures; and - Store fuels and oil containers on stable impermeable surfaces to avoid soil contamination; - Ensure building materials, tools and machinery are stored on stable ground and properly secured to prevent tipping and injury to personnel; and	- Ad hoc and as scheduled

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- Contractors and sub-contractors will not be housed on site but in local towns such as Arandis, Swakopmund or Walvis Bay	
On-site solar plant	- Potential risk of avifauna collision with the on-site ground-mounted solar panels. - Attraction of fauna.	- Bird nests discovered on infrastructure should not be removed or destroyed. - Maintain records of bird collisions with the solar power plant; and - Instances of high collision rates must be investigated to identify potential causes and appropriate mitigation measures.	- Daily - Weekly
	- Poor operations. - Erosion risks.	- The ground-mounted solar array must be inspected and cleaned regularly to ensure it remains functional; - Prevent pooling of water to minimise attraction of wildlife or avifauna from nesting; and - Prevent the creation of erosion gullies when utilising water during cleaning operations.	- Bi-weekly
	- Enhance operations	- The ground-mounted solar array must be inspected and cleaned regularly to ensure it remains functional.	- Bi-weekly
Domestic waste management	- Littering, visual nuisance, odours and health risks.	- Implement the waste management hierarchy across the site: avoid, reuse, recycle, and then dispose of; - Maintain good housekeeping across all operational areas; - Provide clearly labelled waste bins to encourage proper waste sorting by guests and staff; - Separate waste at source into categories such as organic (food waste), recyclable (plastic, paper, metal) and non-recyclable waste;	- Daily - Weekly - Monthly

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- A temporary solid waste storage area must be established, and waste bins must be covered and collected periodically for disposal at a registered waste disposal site off-site; - The waste storage area must always be kept clean and tidy; - Once emptied, food waste bins must be cleaned, dried and returned to their designated areas; and - Ensure used oil is not disposed on-site, but rather trucked to the head office and recycled in collaboration with a registered used oil recycling company.	
Wastewater (effluent) management	- Possible sewage discharge runs. - Leakage and seepage of effluent into water resources. - Odours and disease transmissions.	- No employee may relieve himself or herself in the surrounding environment; - Sewage waste to be removed to an official (municipal) sewage disposal site regularly. Alternatively, pump sewage into sealable containers and store it until it can be removed; - PPE (latex gloves and face masks) provided to employees cleaning toilets; and - Regular inspections to detect leakages from the septic tanks. - Ensure compliance with the Water Resources Management Regulations (No. 269 0f 2023): Water Resources Management Act, No. 11 of 2013; - Specifically, Part 13 (sections 68 - 72) of the Water Resources Management Act No. 11 of 2013 and Part 8 (Sections 66 - 68) of the Water Resources Management Regulations (No. 269 of 2023); - Effluent should not be discharged into a sensitive habitat/area (i.e., dam, river or stream); and	- Daily - Weekly - Monthly - Annually

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- If a major pipe burst or leak has been discovered in the sewage system, groundwater and surface water needs to be monitored and tested to ensure that there is no contamination.	
Safety, security and health	- Injury - Veld fires	- No open fires are permitted on-site; - Adequate number of fire extinguishers (charged and within their service period) should be available where required; - Develop an emergency preparedness plan and conduct regular drills; - The solar plant site shall be secured with appropriate perimeter fencing to prevent unauthorised access by people and wildlife; - Controlled access points shall be established at all entrances, with trained security personnel stationed at the main entrance during operational hours; - Regular security patrols shall be conducted along the perimeter fence, access roads and within the facility to deter vandalism, theft and unauthorised entry; - Access roads to the solar plant shall be clearly demarcated and restricted to authorised vehicles and personnel only; - Signage indicating restricted access and safety hazards shall be installed at all entry points and along the perimeter fencing; and - Security measures shall be reviewed periodically and upgraded as necessary to address identified risks or incidents.	- Monthly
Historical, archaeological and cultural heritage	- Potential damage to heritage or undiscovered archaeological finds,	- In the event that heritage objects or sites are discovered, the chance find procedure (Appendix A) must be adopted and followed; - A heritage consent from the National Heritage Council (NHC) will be required for the management of any future heritage finds; and	- Project's lifespan

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
		- Compliance to the heritage consent conditions will be required (e.g. reporting to NHC on a biannual basis and renewal of the heritage consent throughout the Project lifecycle).	
Career uplifting opportunities	- Skills development.	- Engage in general environmental awareness, skills empowering, career advancing workshops and training (e.g. first aid training, hospitality, technical and software skills training); and - Ensure resources are in place to ensure staff participate in regular training and refresher courses to enhance their skills, knowledge and overall competence.	- Ad hoc basis
Job creation and impacts on the local and regional economy	- Commitment to fair recruitment practices.	- The local authority (town council, local headman etc.) should assist with the recruitment process; and - Where available, ensure that goods and services are sourced from local and regional suppliers to support the surrounding economy (e.g. wood from local farmers).	- Ad hoc basis
Community relations	- Strong working relationship with the neighbouring parks, key stakeholders and regulatory authorities.	- The Proponent must represent the Project by maintaining good working relations with the surrounding communities, external auditors and regulatory authorities; - Ensure that cultural or archaeological objects and sites (if discovered or unearthed) are not damaged and are reported to NHC; and - Maintain a complaints register or similar complaint logging system to ensure any complaint received from the community is recorded and addressed through the appropriate complaint resolution mechanisms.	- Ad hoc basis
Rehabilitation	- Potential obstruction or alteration of natural	- Construction and operational activities shall avoid altering or blocking natural drainage patterns as far as reasonably possible, in order to	- Ad hoc basis

Aspect	Potential impact	Management and mitigation measures	Monitoring requirement
	drainage patterns, leading to erosion and negative impacts on on-site biodiversity.	reduce potential impacts on biodiversity and maintain natural drainage lines on-site.; - Where drainage lines are damaged or disturbed during the construction or operational phases, these areas shall be rehabilitated as soon as possible to restore natural drainage and minimise erosion; and - Rehabilitation measures, where feasible, shall ensure that water can continue to flow through the site in a manner similar to pre-construction conditions, thereby reducing impacts on flora and associated habitats.	

5.1.2 DECOMMISSIONING PHASE

The decommissioning phase follows the operational phase. This section provides a site-specific plan developed to ensure that appropriate environmental and management practices are followed during the decommissioning phase. The section also outlines detailed remediation; site control and monitoring activities that will be conducted once the infrastructure is no longer required.

The decommissioning phase:

- Provide effective and implementable site-specific procedures and mitigation measures to monitor and manage environmental impacts throughout the decommissioning phase. These measures aim to minimise the likelihood and extent of post-decommissioning impacts;
- Establish a long-term management plan for the Project site to ensure its effective transition to its next intended use;
- Aims to eliminate the long-term liability issues and reduce the likely occurrence of irreversible impacts post site closure; and
- Provide a platform for the Proponent to engage/collaborate with local communities, stakeholders and regulatory authorities in the planning and implementation of decommissioning activities, including the disposal of waste, building remnants and post-closure care requirements.

Prior to the implementation of any decommissioning or closure measure, a thorough investigation into potential alternative end uses of the site must be conducted, particularly in collaboration with selected stakeholders. This will ensure that opportunities for sustainable land use and appropriate ecological restoration measures are fully considered and effectively integrated into the overall site closure strategy.

The decommission phase or site closure is yet to be determined. However, should this be required or determined for any reason, the following general conditions outlined in Table 5 shall be followed and implemented, as best practice measures.

Table 5 - Rehabilitation plan

Aspect	Management measures required
Tools and equipment	– All fuel containers and tanks must be removed, and any hydrocarbon stains or spillages within Project work areas must be promptly and thoroughly cleaned up; and – The fuel storage tanks, solar panels mounted arrays, underground cabling, all hand and power tools must be cleared from site prior to site closure.
Wastewater management systems	- All drainage systems, wastewater pipes and components of the septic tanks must be disconnected, dismantled and safely disposed offsite at a registered waste disposal facility or wastewater treatment works; and - Ensure all wastewater is properly drained (i.e. no pooling shall remain on-site upon closure).
Building remnants, scrap metals etc.	- All infrastructure, including concrete foundations must be demolished to ensure there will be no free-standing structures; and - Building remnants should be disposed offsite at a registered waste disposal site.
Solid waste management	- All solid waste generated must be handled in accordance with the site waste handling procedures; and - No waste may be buried on-site.
Gravel roads	- Dis-used roads and site access roads must be rehabilitated to enhance the aesthetic value of the site.
Site closure	- Conduct a final site inspection with the representatives of the conservation and / or regulatory authorities (MEFT, NHC or MAFWLR) to verify satisfaction with decommissioning outcomes; and - Once approval is granted, a satisfaction letter or certificate must be issued to the Proponent by the relevant regulatory or park representatives.
Future land use	- Collaboration with selected stakeholders is required to guide future land use planning.

6 IMPLEMENTATION OF THE OEMP

This ESMP:

A. Has been revised pursuant to the contract with the Proponent;
B. Has been revised on the basis of information provided to ECC up to December 2025;
C. Is for the sole use by the Proponent, employees, contractors and subcontractors during the operational, decommissioning phase and possible future construction activities;
D. Must not be used by any person other than (1) the Proponent (2) Contractors and subcontractors; and
E. Must not be copied without the prior written permission of ECC.

APPENDIX A - CHANCE FIND PROCEDURE

This section covers the procedures, reporting and management of sites or items of heritage significance should they be discovered, encountered or unearthed within operational on construction areas.

Scope: The ”chance finds” procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act, No. 27 of 2004, especially Section 55 (4) which states that: ”a person who discovers any archaeological object must as soon as practicable report the discovery to the Council”. The procedure of reporting set out below must be observed so that heritage remains reported to the National Heritage Council (NHC) are correctly identified in the field.

Table 6 provides the environmental aspects and impacts, mitigation and monitoring measures for archaeological and heritage aspects.

Table 6 - Archaeological and heritage aspects

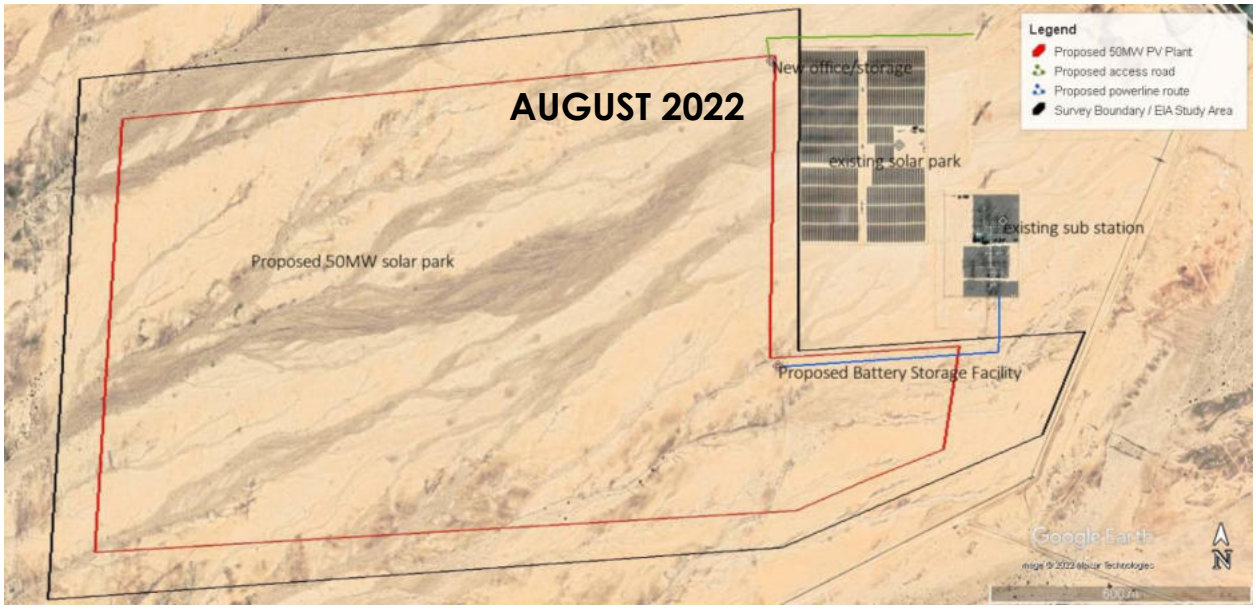
Responsibility:	– Operations and maintenance team, asset management team, contractors and subcontractors
Potential issues or impacts:	– Impact on heritage features.
Management /mitigation measures	
Potential to unearth heritage objects or resources	– All personnel and contractors should be aware of the protected archaeological site and the legal obligation to report any new findings to the National Heritage Council (NHC) immediately. Should a heritage site or archaeological site be uncovered or discovered, particularly during the construction or operational phase, a chance find procedure should be applied in the order they appear below: – If operating machinery or equipment, stop work; – Demarcate the site with danger tape; – Determine the geographical positioning system (GPS) position if possible; – Report findings, site location and action taken to management; – Cease any works in the immediate vicinity;

	– Visit the site and consult any potentially affected community to determine whether work can proceed without damage to the findings; – Determine and demarcate the exclusion boundary; – Site location and details to be added to the Projects geographic information system (GIS) for field confirmation by an archaeologist; – Inspect the site and confirm addition to the Projects GIS; – Advise the NHC and request written permission to remove findings from work area; and – Recover, package and label findings for transfer to the National Museum.
	Should human remains be found, the following actions must be followed: – Apply the chance find procedure as described above; – Schedule a field inspection with an archaeologist to confirm that the remains are human; – Advise and liaise with the NHC and Police; and – Remains will be recovered and removed to either the National Museum or the National Forensic Laboratory.

APPENDIX A

PROPOSED 50MW SOLAR PHOTOVOLTAIC PLANT ON A 150HA SITE NORTH WEST OF ARANDIS, ERONGO REGION

ENVIRONMENTAL MANAGEMENT PLAN



ENVIRO DYNAMICS
Environmental Management Consultants

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TABLES AND FIGURES

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
DEA	Directorate of Environmental Affairs
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EA	Environmental Assessment
EMP	Environmental Management Plan
ER	Employer's Representative
GG	Government Gazette
GN	Government Notice
HIV	Human Immunodeficiency Virus
I&APs	Interested and Affected Parties
MVA	Mega Volt-Ampere
NHC	National Heritage Council
PPE	Personal Protective Equipment
PV	Photovoltaic
TB	Tuberculosis

1 INTRODUCTION

Sorexa Energy plans to establish a 50MW photovoltaic (PV) solar plant at Trekkopjie. This document details the Environmental Management Plan (EMP) as informed by the Environmental Scoping Report conducted for this project.

The proposed site is approximately 150 ha in size. The following are the main project components:

- The solar panels and support structures;
- Inverters and step-up transformers; and
- 11 kV transmission line supported by monopole structures.

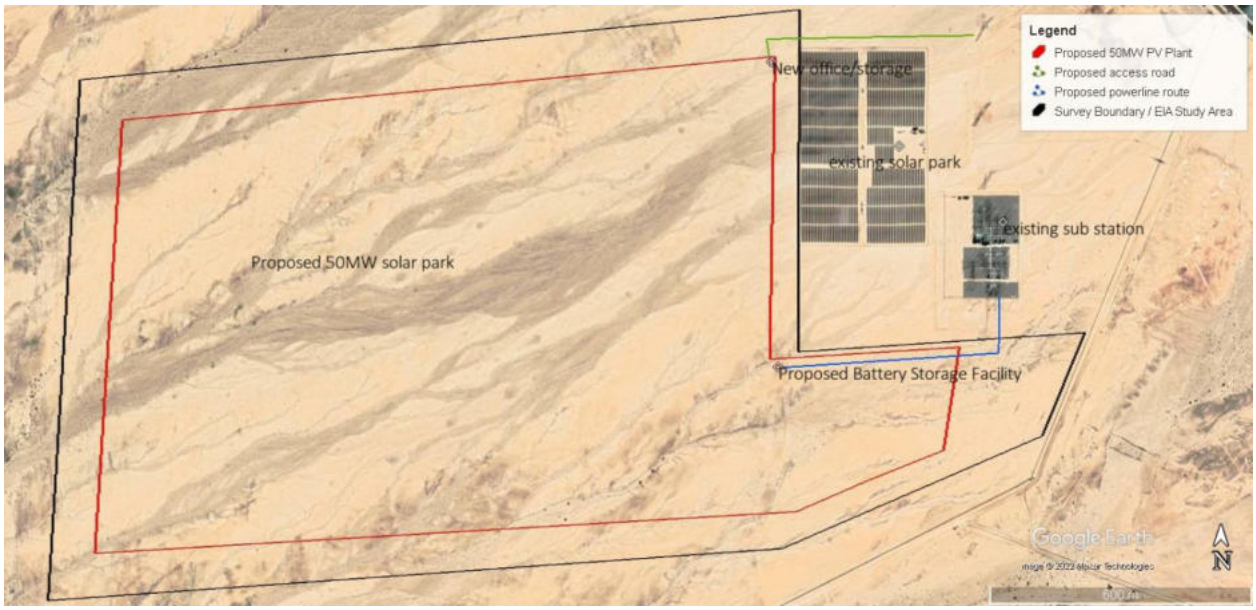

Figure 1: Proposed project site and transmission line route

An EMP is one of the most important products of an Environmental Assessment (EA) process. An EMP synthesises all recommended mitigation and monitoring measures, laid out according to the various stages of a project life cycle, with clearly defined follow-up actions and responsibility assigned to specific actors. This EMP has been drafted in accordance with the Namibian Environmental Management Act (No. 7 of 2007) and its Environmental Impact Assessment Regulations (2012). This plan describes the mitigation and monitoring measures to be implemented during the following phases of the development:

- Planning and design;
- Construction tender preparation; and
- Operation and maintenance.

The explicit decommissioning of this project is not foreseen, however some mitigation measures will be provided for, in the event that decommissioning takes place.

The commitments described here form part of the Environmental Clearance Certificate (ECC) between Sorexa and the state, as represented by the Ministry of Environment, Forestry and Tourism. Non-compliance is considered illegal and may have legal consequences. The amendment, transfer or renewal of the ECC for this project, as well as any changes to this EMP, should be communicated to the Environmental Commissioner as stipulated in the Environmental Management Act of 2007 (S 39-42).

2 RESPONSIBILITIES

The responsibility for the implementation of the EMP ultimately lies with the Sorexa, who is also responsible for the eventual operation of the project. The implementation of this EMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during each phase of this project.

The Developer should appoint an Employer's Representative (ER) to oversee all aspects of this project (including all contracts for work outsourced) – one for the construction phase and one for the operational phases (both of these positions may be assigned to one person). The ER will in turn appoint an Environmental Control Officer (ECO) to oversee the implementation of the whole EMP (if no ECO is appointed this responsibility remains with the ER). The following positions and their respective responsibilities will be outlined below:

- Employer's Representative;
- Environmental Control Officer; and
- Contractor (Construction and Operations and Maintenance).

2.1 EMPLOYERS REPRESENTATIVE (ER)

The ER is appointed by the Developer to manage all contracts for work/services that are outsourced during the construction, operations and maintenance and decommissioning phases. This position may be filled by any competent OPE employee. Any official communication regarding work agreements is delivered through this person. The ER should with the commencement of the project appoint a competent ECO who will represent the Developer on-site.

The ER shall assist the ECO where necessary and will have the following responsibilities regarding the implementation of this EMP:

- Ensuring that the necessary legal authorisations and permits (see **Table 1**) have been obtained by the Contractor;
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary;
- Ordering the removal of person(s) and/or equipment not complying with the EMP;
- Issuing fines for transgression of site rules and penalties for contravention of the EMP; and

- Providing input into the ECO's ongoing internal review of the EMP. This review report is submitted on a monthly basis to the Developer.

2.2 ENVIRONMENTAL CONTROL OFFICER (ECO)

The ECO should be a competent person appointed by the ER. The ECO is the Developer's on-site representative primarily responsible for the monitoring and review of on-site environmental management and implementation of the EMP by the Contractor. If no ECO is appointed the duties of the ECO fall upon the ER.

The ECO's duties include the following:

- Assisting the ER in ensuring that the necessary environmental authorisations and permits have been obtained;
- Maintaining open and direct lines of communication between the ER, Developer, Contractor, and Interested and Affected Parties (I&APs) with regard to this EMP and matters incidental thereto;
- Monthly site inspection of all construction areas with regard to compliance with this EMP;
- Physical presence during crucial times of the implementation of this EMP, such as during site establishment (clearance of vegetation) and during site clean-up.
- Monitor and verify adherence to the EMP (audit the implementation of the EMP) and verify that environmental impacts are kept to a minimum;
- Taking appropriate action if the specifications of the EMP are not adhered to;
- Assisting the Contractor in finding environmentally responsible solutions to problems;
- Monthly inspection to verify whether or not new personnel have received environmental awareness training;
- Advising on the removal of person(s) and/or equipment not complying with the specifications of the EMP in consultation with the ER;
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP; and
- Undertaking a continual review of the EMP and recommending additions and/or changes to the document.

2.3 CONTRACTOR

The Contractor is responsible for the implementation, onsite monitoring and evaluation of the EMP. It is envisaged that various contractors will be appointed at various times and for various tasks throughout the life cycle (construction through to decommissioning phase) of this project. These can be broadly grouped into Construction Contractors and Operations and Service Contractors. In order to ensure sound environmental management, the relevant sections of this EMP should be included in all contracts of work outsourced, thus legally binding all appointed contractors. All contractors shall ensure that adequate environmental awareness training (see **Section E**) of senior site personnel takes place and that all construction workers and newcomers receive an induction presentation on the importance and implications of this EMP. The presentation shall be conducted, as far as is possible, in the employees' language of choice.

The Contractor should keep records of all environmental training sessions, including names, dates and the information presented.

3 MANAGEMENT REQUIREMENTS

This EMP has been structured so as to provide its various intended recipients (Developer, ER, consulting engineers and contractors) with mitigation measures immediately applicable to their respective scopes of work. The management requirements for the various recipients carrying out work for this project are divided according to the main project phases:

- Permit and relevant legal requirements (**Table 1**);
- Planning and Design Phase requirements (**Table 2**);
- Construction Tender Preparation Phase requirements (**Table 3**);
- Construction Phase management requirements (**Table 4**); and
- Operation and Maintenance Phase management requirements (**Table 5**).

3.1 PERMITS AND RELEVANT LEGAL PROVISIONS

Table 1: Relevant legislated permit requirements

THEME	LEGISLATIVE INSTRUMENT	MANAGEMENT REQUIREMENTS
Archaeology	National Heritage Act 27 of 2004	All protected heritage resources (e.g. human remains etc.) discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
Electricity	Electricity Act 4 of 2007	Licences are required for the generation and trading of electricity.
Environmental	EIA Regulations GN 57/2007 (GG 3812)	The amendment, transfer or renewal of the Environmental Clearance Certificate (S19 & 20).
Forestry	Forest Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	• Protected tree species and any vegetation within 100 m from a watercourse may not be removed without a permit. • A Harvesting Permit is required if wood is to be collected (harvested) for use as fuel.
Labour	Labour Act 11 of 2007 Health and Safety Regulations (HSR) GN 156/1997 (GG 1617).	Adhere to all applicable provisions of the Labour Act and the Health and Safety regulations.
Land lease	Communal Land Reform Act (2003)	Land Lease Agreement in place.
Water	Water Act 54 of 1956	A permit is required for the purification of effluent (Section 21)

3.2 PLANNING AND DESIGN PHASE

The management requirements detailed in the table below need to be carried out before any tender documents are drafted for the construction of various aspects of this project. These management requirements are also applicable for the period during which detailed engineering designs/drawings are carried out.

Table 2: Management requirements for the Planning and Design phase

ASPECT	MANAGEMENT REQUIREMENT
Cleaning of PV tables	Investigations regarding water conserving designs should be carried out and consider as a minimum the following alternative/supplementary cleaning methods: • Options for using recycled water; • Use of industrial leaf blowers; • Use of self-cleaning methods: – Use of electrostatic charge to repel dust and force it to the edges of the panels; – Use of vibrations to shake dust off of panels. The tarring of service roads should be considered as an additional dust suppression method. Vegetation on site is very sparse. Annual grasses should be kept intact as this will assist in lowering dust on site.
Borrow pit investigation	Borrow pit investigations need to include environmental considerations and requirements: • As first option investigate/explore the use of local building sand suppliers to supply the project's building sand requirements. • Ensure that all borrow pits utilised, commercial or private, have environmental clearance and Environmental Management Plans in place, which are being implemented. • Avoid sensitive areas (e.g. areas with high biodiversity, protected archaeological sites, rivers or drainage lines).
Erosion and preservation of gypsum crust	Consideration should be given to the erosion control design. The existing drainage lines should be kept intact as far as possible, suing natural methods for embankments, water flow diversion such as gabions, only where necessary. The design needs to consider the following: The operations of the construction team needs to be organised in such a way that the sensitive gypsum crust in the area is avoided and that the area of impact is limited as far as possible. No mechanical equipment will be allowed to remove vegetation on site. All vegetation clearance works will be done manually.
EMP Implementation	Sorexa needs to appoint an Employer's Representative (ER) to act as the Employer's on-site implementing agent. This person will be responsible to ensure that OPE's responsibilities are executed in compliance with relevant legislation and this EMP.

ASPECT	MANAGEMENT REQUIREMENT
Workforce accommodation	Consideration should be given to the accommodation of the workforce, which will not in Arandis (prohibited on site). It is preferred that workers from Arandis be appointed who are already residing there. For those not from Arandis, consultation is to take place with the Arandis Town Council, to find suitable accommodation or to create a temporary site with suitable infrastructure for this purpose.
Vegetation study	Employ a vegetation specialist to identify any potential plants of conservation concern in the areas indicated on the map below (Figure 2) The Green zone could be used on condition that a vegetation specialist investigates the occurrence of *Lithops* species and provides recommendations of how they should be preserved/removed prior to construction. The Blue area is to remain free of development, since it is also an important drainage line.

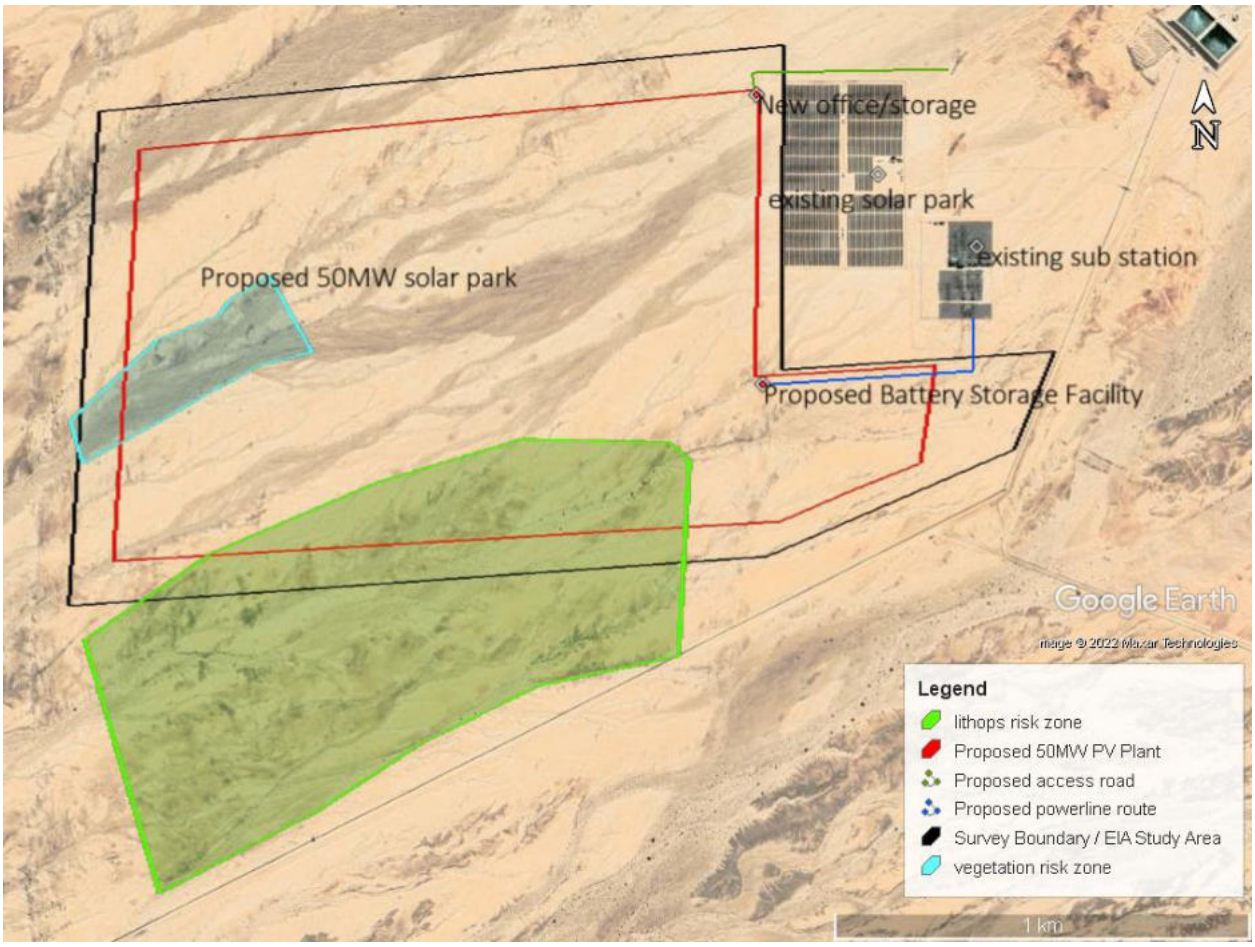

Figure 2: **Blue area: important drainage line and potential area of vegetation concern, green area: potential area of vegetation concern.**

3.3 CONSTRUCTION TENDER PREPARATION PHASE

The management requirements described below should be consulted and carried out whenever a construction tender document is prepared.

Table 3: Construction tender preparation phase management requirements

ASPECT	MANAGEMENT REQUIREMENTS
EMP implementation	Relevant sections of this EMP should be included in the tender documents for all development so that tenderers can make provision for implementation of the EMP.
Financial provision	• Financial provision for the compilation of a **Waste Management Plan** should be included as a cost item within tenders concerning the operation and maintenance of services infrastructure. • Financial provision for topsoil management and the rehabilitation of borrow pits should be included as a cost item within construction tender documents. • Financial provision for the co-opting of a health officer from the Ministry of Health and Social Services to facilitate HIV/AIDS and TB education programmes periodically on-site during the construction phase should be included as a cost item within construction tender documents. • Financial provision for the facilitation of an induction programme for both senior, casual construction personnel as well as subcontractors and associated personnel should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. • Financial provision for the implementation of a labour intensive project should be made in the tender documents. • Financial provision for the accommodation of the workforce in Arandis, for those not accommodated there, and for the provision of meals and cooking facilities (no wood is to be removed from site) on site. • Financial provision for the drafting of a **Communication Plan** should be included as a cost item within construction tender documents.
Recruitment	• Provisions designed to maximise the use of local labour should be included within tenders concerning the construction and/or maintenance of services infrastructure. • A provision stating that all unskilled labour should be sourced from local communities should be included within tenders concerning the construction and/or maintenance of services infrastructure. • Specific recruitment procedures ensuring local firms receive preference during tender adjudication should be included within tenders concerning the construction and/or maintenance of services infrastructure. • Provisions promoting gender equality pertaining to recruitment should be included within tenders concerning the construction and/or maintenance of services infrastructure. – Women should be given preference for jobs, which are less toil-intensive.

3.4 CONSTRUCTION MITIGATION DETAILS

The following table provides a large scale overview of all the major environmental management themes pertaining to both generic and site specific construction mitigation details. This table serves to act as quick reference, for the detailed mitigation details that follow below, for the implementation of the construction component of this EMP.

Table 4: Generic and site-specific environmental management actions for the construction phase

THEME	OBJECTIVE	MITIGATION DETAIL	
		GENERIC	SITE-SPECIFIC
Waste management	Avoid and where not possible minimise all pollution associated with construction.	Section A	N/A
Borrow pits	Ensure topsoil protection and post-construction rehabilitation.	Section B	N/A
Health and safety	Safeguard health and safety of labourers and general public.	Section C	N/A
Dust and noise	Avoid and where not possible minimise dust and noise associated with construction.	Section D	N/A
Environmental training and awareness	Awareness creation regarding the provisions of the EMP as well as importance of safeguarding environmental resources.	Section E	N/A
Environmental conservation	Minimise construction activity footprint and safeguard biodiversity in ecologically sensitive areas.	Section F	Section F
Employment/ Recruitment	Minimise negative conflict through legal and fair recruitment practices.	Section G	N/A
Stakeholder communication	Provide a platform for stakeholders to raise grievances and receive feedback and hence minimise negative conflict	Section H	Section H
Socio-economic and Miscellaneous	Ensure due consideration is given to matters regarding the cultural and general wellbeing of the affected community and matters incidental thereto.	Section I	N/A

SECTION A: WASTE MANAGEMENT

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Waste management plan	• The Contractor should compile a Waste Management Plan which should address as a minimum the mitigation measures included below. • "Waste" is defined as any matter, whether gaseous, liquid or solid or any combination thereof, which is an undesirable or superfluous by-product, emission, residue or remainder of any process or activity.
Hazardous waste	• All heavy construction vehicles and equipment on site should be provided with a drip tray. – Drip trays are to be transported with vehicles wherever they go. – Drip trays should be cleaned daily and spillage handled, stored and disposed of as hazardous waste. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should be take place only at a designated workshop area. – The workshop area should be lined with concrete. – The workshop should be contoured so that run-off from the servicing and washing of vehicles and equipment drains into an oil-water separator, silt trap or lined pit (which should also be installed). • Spilled concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. • All hazardous substances (e.g. fuel etc.) or chemicals should be stored temporarily in labelled, safe and sealable containers at a specific location on an impermeable surface, which is bunded. The bunded area should be able to contain 1.5 times the volume of the hazardous material to be stored in the bunded area. • Battery systems should be sealed and not opened or serviced on site.
Sewage and grey water	• Do not allow sewage (black water) to be discharged directly onto open soil along drainage lines, or any unspecified area. • All sewage must be removed regularly and disposed of at a recognised (municipal) sewage treatment facility. • The water collected from equipment cleaning areas (grey water), should not be left standing for long periods of time as this promotes parasite and bacterial proliferation. Grey water should, if practicable, be recycled: – Used for dust suppression; – Used to clean equipment. • If grey water will not be recycled it should be removed along with the black water on a regular basis.

ASPECT	MITIGATION MEASURE
General waste	• The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to a recognised (municipal) waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot. • A sufficient number of separate waste containers for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. • Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project

SECTION B: BORROW PITS

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Topsoil	The Contractor should adhere to prescribed measures emanating from the borrow-pit investigation (see **Table 2**) and the design for excavations and disposal of spoil material.
Rehabilitation	• Upon completion of the construction phase consultations should be held with the local community regarding the post-construction use of the borrow pit(s). • In the event that no post-construction uses are requested, all borrow pits need to be rehabilitated as follows: – Borrow pits may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. – Rehabilitated borrow pits need to match the contours of the existing landscape. – Take note of drainage channels in the vicinity of the borrow pit. The rehabilitated area should not be higher (or lower) than a drainage channel. This ensures the efficiency of revegetation and reduces the chances of potential erosion. – Topsoil is to be spread across borrow pit areas evenly. – Deep ripping is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. – Ripping should be done along contour lines, not up and down a slope, which could lead to enhanced erosion. – Rehabilitated borrow pits need to remain fenced-off after they have been decommissioned to prevent livestock from removing the newly established vegetation on the area.

APPENDIX C: HEALTH AND SAFETY

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION MEASURES	
HIV/AIDS and TB training	The Contractor should approach the Ministry of Health and Social Services to co-opt a health officer to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase.
Road Safety	• Demarcate roads clearly. • Provide warning signage where appropriate. • Off-road driving should not be allowed. • All vehicles that transport materials to and from the site must be road-worthy. • Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules. • Loads upon vehicles should be properly secured to avoid items falling off the vehicle.
Safety Around Excavated and Work Areas	• Excavations should be left open for an absolute minimum time. • Excavate short lengths of trenches and box areas for services or foundations in such a way that the trench will not be left unattended for more than 24 hours. • Demarcate the following areas with danger tape: – All excavation works; – Soil and other building material stockpiles; and – Temporary waste stockpiles • Provide additional warning signage in areas of movement and in "no personnel" areas where workers are not active. • Borrow pits are to be fenced off with steel wire fencing. • Work areas must be set out and isolated with danger tape on a daily basis with additional warning signage where appropriate. • All building materials and equipment are to be stored only within set-out and demarcated work areas. • Only construction personnel will be allowed within these work areas. • 2 fire extinguishers should be available at the fuel storage area • Comply with all mitigation measures laid out in **Section A** (Waste Management mitigation measures)
Toilets	• Separate toilets should be available for men and women and should clearly be indicated as such. • Portable toilets (i.e. easily transportable) should be available at every construction site: – 1 toilet for every 25 females. – 1 toilet for every 50 males.

ASPECT	MITIGATION MEASURE
	– **Toilets should be no further than 250m from any worker.** – Sewage waste needs to be removed on a regular basis to an official (municipal) sewage disposal site. Alternatively, pump sewage into sealable containers and store it until it can be removed. – **Its important that the adequacy of the number of toilets on sites be monitored. Construction workers should not be allowed to roam off site to relieve themselves. Should this start to happen, corrective measures are needed, including training and communication to test the adequacy of the number of and distance to toilets. Rectify as necessary.** – Workers responsible for cleaning the toilets should be provided with latex gloves and masks.
Open fires	No open fires may be made anywhere on site.
General	• All workers should have appropriate Personal Protective Equipment (PPE) and records of the distribution of PPE should be kept/maintained • Dust protection masks should be provided to workers if they complain about dust. • Potable water should be provided to workers. • No person should be allowed to smoke close to fuel storage facilities or portable toilets (if toilets are chemical toilets – the chemicals are flammable). • No workers should be allowed to drink alcohol during work hours. • No workers should be allowed on site if under the influence of alcohol.

SECTION D: DUST AND NOISE

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Dust	• A watering truck should be used on gravel roads with the most heavy vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. • Ensure that adequate ventilation is available in the event of sanding or grinding work. • Stockpiles of building materials and earth material to be kept moist or the surfaces stabilised • Limit the size of stockpiles of large quantities of soil, topsoil and other fine material. • Improve awareness of ambient air quality and consideration regarding wind speed and direction when undertaking dust generating activities
Noise	• Work hours should be restricted to between 07h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. • In the event that work is necessary outside the designated working hours, all receptors (residents or businesses within 500 m from the work areas) will need to be notified at least 2 days in advance.

SECTION E: ENVIRONMENTAL TRAINING AND AWARENESS

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Environmental Induction (Training)	All construction workers are to undergo environmental induction (training) which should include as a minimum the following: • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of construction activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities. • Explanation of the specific mitigation measures within this EMP especially unfamiliar provisions.

SECTION F: ENVIRONMENTAL CONSERVATION

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Conservation of vegetation	• No driving beyond demarcated areas and off established roads. • No movement of staff or visitors beyond the project site. • The collection of plants or wood for cooking beyond the project site should be strictly prohibited.
Conservation of water	• Water effective equipment should be used. • All leaking fittings need to be repaired or replaced timeously. • Brooms should be used to clean floors rather than hosing them down with a pipe. • Use buckets or high pressure hoses to clean areas, equipment or vehicles instead of a regular hose pipe.
Materials camp and lay-down areas	Suitable locations for the materials camp and lay-down areas should be identified with the assistance of the ER and the following should be considered in selecting these sites: • Avoid sensitive areas (see Figure 2). • The areas designated for the proposed services infrastructure should be used as far possible as lay-down areas. • Second choice should be degraded land.
SPECIFIC MITIGATION DETAILS	
Conservation of vegetation	• No construction or movement should take place beyond the site boundaries or in the demarcated area unless approved by a specialist (**Figure 2**).
Birds	• Consult an avifauna specialist for practical advice how to protect birds from collision and electrocution on the transmission line before construction.
Conservation of water	The provisions contained in the Water Management Plan (see **Table 2**) should be implemented.

SECTION G: EMPLOYMENT/RECRUITMENT

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Legislation	Adhere to the legal provisions in the Labour Act (see **Table 1**) for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.) in the Contract.
Recruitment	The Contractor should compile a document to be used as a guide for the recruitment process, which should include the following provisions as a minimum: • The local authority (town council, local headman etc.) should assist with the recruitment process. • Recruitment should not take place at construction sites. • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed upon process. • Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those from the project area and only then look to surrounding towns. • Clearly explain to all job-seekers the terms and conditions of their respective employment contract (e.g. period of employment etc.) – make use of interpreters when necessary.

SECTION H: STAKEHOLDER COMMUNICATION

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Communication plan	The Contractor should draft a Communication Plan, which should outline as a minimum the following: • How stakeholders, who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records; • How these stakeholders will be consulted on an ongoing basis; • Make provision for grievance mechanisms – i.e. how concerns can/ will be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event feedback is deemed unsatisfactory.
General communication matters	• The ER should appoint an ECO to liaise between the Contractor, stakeholders, Developer, and consultants. The appointed Contractor shall appoint a person from the construction team to take responsibility for the implementation for all provisions of this EMP. • The Contractor shall at every site meeting report on the status of the implementation of all provisions of the EMP. • The Contractor should implement the environmental awareness training as stipulated in **Section E**. • The Contractor must list the stakeholders of the project and their contact details with whom ongoing communication would be required for duration of the contract. This list, together with the Communication Plan must be agreed upon and given to the ER before construction commences. • The Communication Plan, once agreed upon by the Developer, shall be binding. • All communication with the stakeholders must take place through the ECO. • A copy of the EMP must be available at the site office and should be accessible to all stakeholders • Key representatives from the above mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding project progress. • The Contractor should liaise with the Developer regarding all issues related to community consultation and negotiation before construction commences. • A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. • All people on the stakeholders list should be informed about the availability of the complaints register in writing by the ER prior to the commencement of construction activities.
SPECIFIC MITIGATION DETAILS	
Communication with property owners	At the outset (i.e. before commencement) of the construction programme, all residents along the route will have to be informed about construction activities within the reserve

	in front of their property. This should be done in cooperation with the applicable constituency councillors.

SECTION I: SOCIO-ECONOMIC AND MISCELLANEOUS

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Archaeology and Heritage Resources	• Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied in the order they appear below: – If operating machinery or equipment stop work; – Demarcate the site with danger tape; – Determine GPS position if possible; – Report findings to foreman; • Action taken by foreman: – Report findings, site location and actions taken to superintendent; – Cease any works in immediate vicinity; • Action taken by Superintendent: – Visit site and determine whether work can proceed without damage to findings; – Determine and demarcate exclusion boundary; – Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by archaeologist; • Action taken by archaeologist – Inspect site and confirm addition to project GIS; – Advise the National Heritage Council (NHC) and request written permission to remove findings from work area; and – Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required: – Apply the chance find procedure as described above; – Schedule a field inspection with an archaeologist to confirm that remains are human; – Advise and liaise with the NHC and Police; and – Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory as directed.

3.5 OPERATION AND MAINTENANCE PHASE

The following mitigation measures should be complied with and carried out during any operation and maintenance works associated with the project facilities and services infrastructure for the proposed project.

Table 5: Operation and maintenance phase mitigation measures

ASPECT	MITIGATION MEASURE
Maintenance of associated infrastructure	Maintenance works for the associated infrastructure within the project area should adhere to all provisions contained in Sections A to G of the construction mitigation measures of this EMP (**Chapter 3.4**).
Post-construction borrow pit usage	Borrow pits to be utilised post-construction should adhere to the same topsoil and rehabilitation measures outlined within construction mitigation measures of this EMP (**Chapter 3.4**) above.
Post-construction environmental training and awareness	All contractors appointed for maintenance work on the respective services infrastructure must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.
Cleaning of PV tables	• A Water Management Plan should be compiled by the Developer and should include as a minimum the following: – All measures emanating from the Investigations regarding water conserving designs (see **Table 2**); and – Water effective equipment should be used (i.e. high-pressure hoses instead of regular hose pipes).

3.6 DECOMMISSIONING

ASPECT	MITIGATION MEASURE
Dismantling of project components and associated waste	• All materials produced from the dismantling of project components (which will not be sold) should be sorted into recyclable and non-recyclable materials. Recyclable material should be transported to the nearest recycling depot. • No waste should be left on site after the project has been decommissioned
Construction-like activities	Many of the activities involved in decommissioning a large project have considerable overlap with the activities for which mitigation measures have been provided for in **Chapter 3.4**. Where applicable these should be complied with