

## Updated Environmental Management Plan (EMP)

**Amendment of the Environmental Clearance Certificate (ECC): Operational and Maintenance Activities for the Trekkopje Solar (Photovoltaic) Park with the installed power of 5.76MW in the Erongo Region, Namibia**



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**DOCUMENT INFORMATION**

Title: Amendment of the Environmental Clearance Certificate (ECC) and Environmental Management Plan (EMP): Operational and Maintenance Activities for the Trekkopje Solar (Photovoltaic) Park with the installed power of 5.76MW in the Erongo Region, Namibia

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## EXECUTIVE SUMMARY

Sertum Energy Namibia Pty Ltd have been operating and producing/generating electricity at their 22.80 Mega-Watt alternating current (MWac) Trekkopje Solar (Photovoltaic (PV)) Park in the Erongo Region. The project has an installed power of 5.76 Mega-Watt (MW). The project site covering surface area of 70 hectares (ha) is situated within the Orano Mine premises, near Arandis Town, about 60km northeast of Swakopmund in the Erongo Region and about 11km east of the Dorob National Park boundary.

Under the Namibian Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations, the project activities (electricity generation, transmission and supply) is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC).

To comply with the EIA Regulations of the Act, the project has a valid ECC (ECC001612), issued (renewed) to Sertum Energy Namibia by the Environmental Commissioner on the 9<sup>th</sup> of September 2021 upon submission and approval of an updated Draft Environmental Management Plan (EMP) in June 2021. The ECC is valid until the 09<sup>th</sup> of September 2024, upon which it will be renewed before the expiry date. This ECC requires an amendment as needed by the Sertum Energy Namibia (please see below).

### The Need for ECC Amendment

The Proponent proposes to construct (establish) and operate a storage structure to shelter spare parts onsite for the project operation (within the Sertum Energy project site boundaries). The structure will be equipped with an ablution facility (toilet) with a waste (septic) tank that will be installed in the structure. The septic tank will be emptied offsite as regularly as needed (depending on the capacity and or as prescribed by the Manufacturer).

The proposed shelter structure is needed for the storage of spare parts and related equipment onsite to ensure that project operations are carried out smoothly and maintenance/servicing of project parts and equipment is done timely and as efficiently as possible. This is also done to ensure that there are no interruptions to the project operations, thus, maintaining operational productivity.

Subsequently, Sertum Energy Namibia has appointed Serja Hydroge-Environmental Consultants (independent Environmental Consultants) to apply for their ECC amendment (by amending the current Environmental Management Plan (EMP)).

It is for this reason that this document has been compiled as a supplementary document to the ECC renewal application to enable compliance of the project activities. The new ECC has been applied for and submitted to the Ministry of Environment, Forestry and Tourism (MEFT). The date stamped copy of the ECC renewal application Form also been uploaded on the EIA online system (Portal) of MEFT and upon submission of an updated draft Environmental Management Plan (EMP), a new ECC for the project will be considered.

The implementation of the EMP and compliance during the validity period of the current environmental clearance certificate (ECC) will be continued. The evaluated and updated EMP compliance status has been carried out based on the updated EMP compiled in 2021. The project site status indicates that the great progress and improvement has been made on the EMP implementation from the 09<sup>th</sup> of September 2021 to date for improving and ensuring environmental management and sustainability.

The EMP Implementation Monitoring (Environmental Monitoring): Environmental Audit/Compliance Reports has been compiled for every monitoring and submitted to the DEAF at the Ministry of Environment, Forestry and Tourism for archiving. This would make ECC Renewals easy because of an in-between track record of monitoring progress prior to the expiry date of the valid ECC.

## **RECOMMENDATIONS AND CONCLUSIONS**

The Environmental Consultant has carried out site visits and observations for the implementation of the current EMP onsite as part of environmental monitoring for the past 1.5 years. The project is of small to medium-scale level and activities are well limited within the site boundaries. The Proponent has been compliant with the EMP requirements as recommended for the completed construction phase, and now in the operational phase. The components of the EMP (management measures) that were recommended for the construction activities have been fully implemented (in full compliance) and this has been observed with some biophysical and social environmental components on and around the site.

### **Recommendations**

The Environmental Consultant is confident that the potential negative impacts associated with the current and additional project activities can be mitigated by effectively implementing the recommended management action measures and with more effort and commitment put on implementation monitoring. It is therefore, recommended that the Solar (PV) project and associated activities on site be granted a new Environmental Clearance Certificate, and provided that:

- All the respective management (mitigation) measures provided in the 2021 EMP and this amended EMP are effectively implemented progressively per project phase and monitored as stipulated to achieve full EMP implementation compliance.
- All required permits, licenses and approvals for the project activities are obtained as required (please refer to the Permitting and Licensing).

- Where required and emphasized, improvements should be made with full commitment and effectively put in place.
- Sertum Energy, their project workers and contractors comply with the legal requirements governing their project and its associated activities.
- All the necessary environmental and social (occupational health and safety) precautions provided are adhered to.
- To ensure that the ECC is always valid and compliant with Environmental laws, Sertum Energy should continue to effectively conduct Environmental (EMP) Compliance Monitoring and most importantly, ensure timely submission of ECC renewal applications.

### **Conclusions**

The Environmental Consultant acknowledges that Sertum Energy has been compliant with the ECC conditions and implementation of the EMP onsite between September 2021 to date, as well as undertaking of bi-annual environmental reporting. The Environmental Consultant recommends that the ECC be amended so that the Proponent can continue with the project activities (operational phase to generate electricity for the nation) and ensure timely renewal before September 2024.

There has not been any significant changes or activities that might compromise the environment or its components and or trigger significant changes in the management and mitigation measures initially provided.

Furthermore, based on the recent site observations, the site is generally well-kept, and the current works are well within the initial EMP requirements for the operations. The Environmental Consultant trusts that Sertum Energy will continue to maintain the same commitment towards environmental sustainability and ethics throughout the project cycle, and ensure timely renewal of ECC.

Therefore, it is crucial for the Proponent and their workers as well as contractors (where needed) to continue with the effective implementation of the recommended management measures to protect both the biophysical and social environment. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities and structures in the host environment.

The Proponent and contractors will also be required to comply with all legal obligations governing their project activities (throughout to future decommissioning phase, if considered).

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**LIST OF ABBREVIATIONS**

<b>ABBREVIATION</b>	<b>MEANING</b>
<b>DEAF</b>	Department of Environmental Affairs and Forestry
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECB</b>	Electricity Control Board of Namibia
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Control Officer
<b>EHS</b>	Environment, Health and Safety
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act
<b>EMP</b>	Environmental Management Plan
<b>EPs</b>	Equator Principles
<b>ESSs</b>	Environmental and Social Standards
<b>GIIP</b>	Good International Industry Practice
<b>IFC</b>	International Finance Corporation
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>MME</b>	Ministry of Mines and Energy
<b>MW</b>	Megawatt
<b>PV</b>	Photovoltaic
<b>SHE Officer</b>	Safety, Health & Environmental Officer



# 1 INTRODUCTION

## 1.1 Background and Project Location

To contribute to the country’s developmental policies and promote the use of solar energy in Namibia, Sertum Energy Namibia Pty Ltd (the Proponent) have been operating and producing/generating electricity at their 22.80 Mega-Watt alternating current (MWac) Trekkopje Solar (Photovoltaic (PV)) Park in the Erongo Region. The project has an installed power of 5.76 Mega-Watt (MW). The project site covering surface area of 70 hectares (ha) is situated within the Orano Mine premises, near Arandis Town, about 60km northeast of Swakopmund in the Erongo Region (Figure 1-1) and about 11km east of the Dorob National Park boundary.

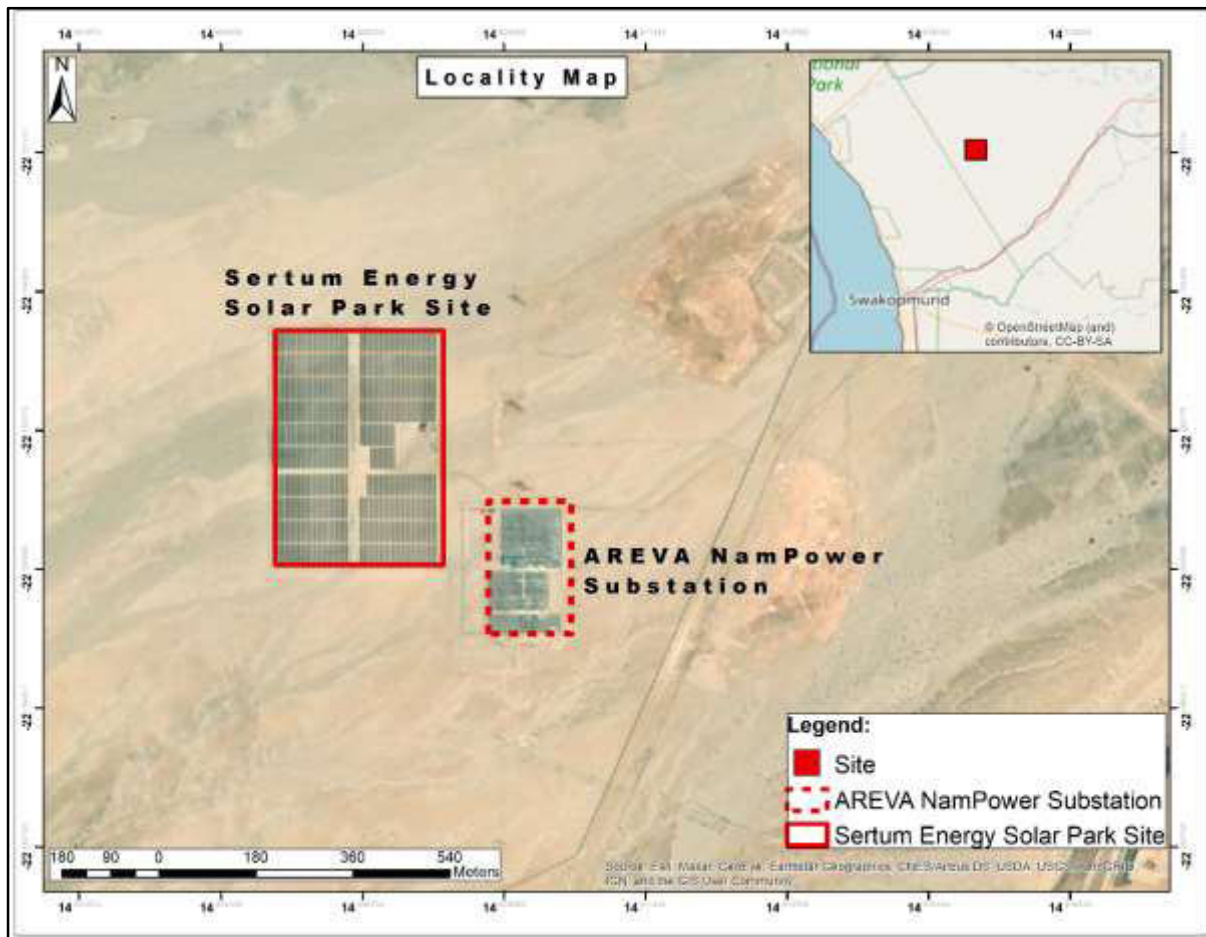


Figure 1-1: Locality map of Sertum Energy Namibia’s Trekkopje PV Site within Orano Mine premises

The point coordinates of the Solar Park and AREVA NamPower Substation are as follows:

- Sertum Energy Solar Park site/panels: -22.156369° 14.806617°

- AREVA NamPower Substation: -22.157393° 14.809389°.

Under the Namibian Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations, the project activities (electricity generation, transmission and supply) is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC). The proposed activity is a listed under the following Sections of the EMA and its 2012 EIA Regulations:

*“ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES*

- *Listed Activity 1. The construction of facilities for:*
  - *(a) The generation of electricity*
  - *(b) The transmission and supply of electricity.”*

The project has a valid ECC (ECC001612), issued to Sertum Energy Namibia by the Environmental Commissioner on the 9<sup>th</sup> of September 2021 upon submission and approval of an updated Draft Environmental Management Plan (EMP) in June 2021. The ECC is valid until the 09<sup>th</sup> of September 2024, upon which it will be renewed before the expiry date - Appendix A.

## **1.2 The Need for ECC Amendment**

The Proponent proposes to construct (establish) and operate a storage structure to shelter spare parts onsite for the project operation (within the Sertum Energy project site boundaries). The structure will be equipped with an ablution facility (toilet) with a waste (septic) tank that will be installed in the structure. The septic tank will be emptied offsite as regularly as needed (depending on the capacity and or as prescribed by the Manufacturer).

The proposed shelter structure is needed for the storage of spare parts and related equipment onsite to ensure that project operations are carried out smoothly and maintenance/servicing of project parts and equipment is done timely and as efficiently as possible. This is also done to ensure that there are no interruptions to the project operations, thus, maintaining operational productivity.

## **1.3 The Application for ECC Amendment**

To comply with the current ECC conditions on amendments (Condition 20 of the current ECC), Sertum Energy appointed Serja Hydrogeo-Environmental Consultants CC (Serja Consultants), Independent Environmental Consultants undertake the tasks required for the application to amend the project ECC and Environmental Management Plan (EMP).

The application for ECC amendment accompanied by this BID is launched on the ECC Portal for registration and screening (assigned application number APP-02037). The amended EMP with associated (required) documents will be uploaded on the ECC Portal. The hard copy of the EMP and ECC amendment application has also been submitted to the Office of the Environmental Commissioner at the Ministry of Environment, Forestry and Tourism (MEFT)'s Directorate of Environmental Affairs for consideration of amending the ECC.

#### **1.4 Environmental Auditing and EMP Implementation Monitoring**

As mentioned above, the project has a valid ECC (ECC01612) issued by the Environmental Commissioner on the 9<sup>th</sup> of September 2021 upon submission and approval of an updated EMP / ECC submitted in June 2021. The ECC is due to expire on the 09<sup>th</sup> of September 2024. Therefore, an application for ECC renewal will be submitted timely in 2024 for evaluation and consideration by the Environmental Commissioner.

The current ECC (in September 2021) was accompanied by conditions, of which among these the requirement for the Proponent to conduct Bi-Annual Environmental Reporting for submission to the Environmental Commissioner. These bi-annual monitoring reports were compiled and submitted to the DEAF between September 2021 and January 2024 – please refer to the proofs of Bi-Annual Environmental Monitoring under Appendix B and as summarized below:

- Following the series of audits done onsite since the ECC issuance (March 2022, and September 2022), Bi-Annual Environmental Reports were compiled, and submitted to the Environmental Commissioner in compliance with the ECC conditions.
- The recent environmental monitoring/audit was done in March 2023.

The environmental monitoring exercises are done to check the site progress and compliance with the ECC conditions. This document was compiled to update on the progress of the site activities, checklist the site performance against the recommended environmental management and mitigation measures of potential adverse impacts as well as the description of the proposed changes to the site.

All the Bi-Annual / Environmental monitoring report were submitted to the Environmental Commissioner as a demonstration of compliance and commitment to environmental management, protection, and sustainability.

The description of the current site activities, as well as the proposed amendments is presented under the next chapter.

## 2 DESCRIPTION OF CURRENT PROJECT ACTIVITIES (UPDATED)

The description of the project activities chapter focuses on the current operational works on site and provide the new changes to the current operational activities (if any), project requirements in terms of inputs and resources, processes, and outputs. The main electrical configuration details of the site (as extracted from the site layout) are shown in Figure 2-1 below.

According to the Multilateral Investment Guarantee Agency (MIGA) (2012-2021), the Project entails the operation and maintenance of solar energy generating facilities, with a capacity of 5MW, in the Erongo Region of Namibia. The electricity output is currently sold to Namibia Power Corporation (Pty) Ltd (NamPower) under a 25-year Power Purchase Agreement (PPA). The Project was awarded through the Renewable Feed in tariff Program.

<b>ELECTRICAL CONFIGURATION</b>	
INSTALLED POWER (DC)	5760.6 kWp
MODULES TYPE	CANADIAN SOLAR CS6U 320P - 325 P
MODULES POWER (DC)	320 - 325 Wp
TOTAL MODULES PER FIELD	15.280 (320 Wp) 2.680 (325 Wp)
MODULES PER STRING	20
NUMBER OF STRINGS	898
INVERTER TYPE	5.844 MVA
NUMBER OF STRING BOXES	57

Figure 2-1: Electrical configuration of the Trekkopje Solar Park site (Sertum Energy Namibia, 2021)

The current site operations are presented below.

### 2.1 Current Project Activities

The following activities have been undertaken for the generation of electricity at the Trekkopje Solar site.

- Electricity generation: The 186,396 solar panels were installed and mounted into aluminium metal frames. A combination of concrete and screw pile foundations are used to support the panel arrays. The solar panels are maintained and checked regularly to ensure that they are operating at 100% for project operational efficiency. The damaged or out of order solar panels are removed and disposed of at an approved off-site waste management facility. The cleaning of the panels is done manually using waster sprinklers, when required.

The arrays are tilted at a fixed angle equivalent to the latitude at which the site is located to capture maximum sunlight. The generated electricity is then transmitted into the AREVA NamPower Substation located next to the Solar Park site. The electricity is supplied to NamPower through a Power Purchase Agreement (PPA) signed by both parties (NamPower and Sertum Energy's Representatives) on the 20<sup>th</sup> of October 2015 and 21<sup>st</sup> of October 2015 in Windhoek, respectively.

The installed capacity is 5.76 MW and the maximum capacity pushed in the grid is 5MWac guaranteed by the Proponent's Power Plant Controller (PPC). A Generation License (with Reference No. G132-010414-25) has been issued to the Proponent by the Electricity Control Board (ECB) of Namibia with a commencement date of 01 April 2014 (and as amended in March 2015). According to this Generation License, the total installed capacity for the License is granted is 27 MW, but subject to ECB approval, should the Proponent decide to change the capacity.

### **2.1.1 Human Resources and Services Infrastructure**

The following services infrastructure and structures are currently utilized and required at the Solar Park, respectively (not much has changed since March 2023 Audit).

- Project workers (staff) and accommodation: there are four employees onsite (two full time technicians and two part-time general workers). The technicians also carry out the maintenance of the site when required and necessary. All the project workers commute to the site from Swakopmund, therefore no onsite accommodation.
- Administration/office and control rooms: The Solar Park project is equipped with temporary administration or office (container control rooms) made from prefabricated materials (Figure 2-2).



Figure 2-2: Fully equipped control rooms (offices) for the Solar Park Site

- Water: The water required for the project is primarily for domestic, clean/potable supplied by Orano Mine and minimally for site operations such as basic cleaning. This water is stored in an industry standard water storage tank on site – Figure 2-3.



Figure 2-3: The water storage tank (next to the white mobile toilet facility) near the PV Plant entrance



- Power supply: There is a converted Alternative Current (AC) electricity for daytime power supply and for night-time, a 400V back feed from NamPower supplies the control room.
- Fuel: The actual solar operations do not require fuel. Therefore, no fuel tanks on site. The vehicles are refuelled elsewhere offsite (in Arandis being the closest equipped town).
- Sanitation: The site is provided with portable toilets on (Figure 2-4) that are maintained and handled by the service provider. The cleaning of the toilets is done once a week. Therefore, no fixed/permanent sewerage systems are on site. No other wastewater or effluent is generated nor produced on site.



Figure 2-4: The white mobile toilet facility next to the site water storage tank at the PV Plant entrance

- Operational solid (general) waste (office/domestic waste and used wood and scrap metals): The domestic and office solid waste generated at the site is minimal. This waste is sorted stored on a waste drum (Figure 2-5) on site and transported to Arandis waste dumping site once the waste containers reach capacity. Although there was visible grass cover under some areas of the solar panels, from observations and minimal vegetation cover (bare desert soils), the site surface is clean with no littering nor oil spills and leaks on the ground.



Figure 2-5: The solid waste drum near the site material storage area (far left) and metal & old panels scrap yard area (close on the bottom right)



- Old and or damaged solar panels (waste): As part of maintenance, the site solar panels are inspected regularly. Should there be any damaged panels that are considered unfit for the project, their serial numbers are recorded before they are written off. These written off panels are then removed and disposed of at the approved and designated hazardous waste management facility. According to the Proponent, the damaged / unusable solar panels would be disposed of at a suitable landfill in Arandis. However, at the beginning of the project operations, when the panels may be not fit to continue for the project purpose but reusable for small scale electricity generation such as in local community' households to generate their own electricity at homes and or resell to others. This practice is however no longer practiced as this would mean improper disposal of the solar panels by the communities by the end of life of the panels. Therefore, the damaged panels are currently stored onsite at the same area with used wood (Figure 2-6) awaiting separation for collection and disposal to the approved dumpsite by a contracted waste removal company.



**Figure 2-6: The old solar panels and used wood (waste) storage area within the eastern side of the site**

- It should be noted that the site technology of the solar panels does not use backup batteries, therefore, solar panels associated waste does not contain batteries that would have been an environmental concern when it comes to their handling and disposal.
- Site accessibility (Road): The primary access road that connects the project site to the surrounding areas and rest of the country is the national road B2. No new roads have been created for the project because the operations are carried out within an existing facility (Orano Mine) with already existing access. There are two access routes to the site which are both restricted roads. Special permission had been obtained from the Mine to make use of these roads. Therefore, the same access roads are utilized by the Trekkopje Solar Park related vehicles.

- Health and safety: All project workers are well equipped with personal protective equipment (PPE) while performing tasks on site. The health, safety and environmental aspects of the site are ensured at the Orano Mine's main entrance (security gate) through an almost 20-minute induction offered to all new workers and site visitors, including contractors - Figure 2-7.



**Figure 2-7: The induction table inside Orano Mine's main gate Induction (Security Control) room**

- Accidental Fire management: The site is equipped with one fully equipped first aid kit and three serviced fire extinguishers. From the previous Audit, the extinguishers were due for service in February 2023. According to the Proponent, the fire extinguishers' service (as shown in Figure 2-8) was due end of March 2023.



**Figure 2-8: The three site fire extinguishers inside the control room (office) onsite**

- Site fencing and Security: Since the project site is within the Orano Mine premises, the site is accessed through the Mine's main gate. The solar panels and associated infrastructures such as control rooms are also fenced off (Figure 2-9) to separate the two operations/activities (mining and electricity generation). Therefore, the project site and its activities are secured this way. There are also surveillance cameras installed around the site for additional security.

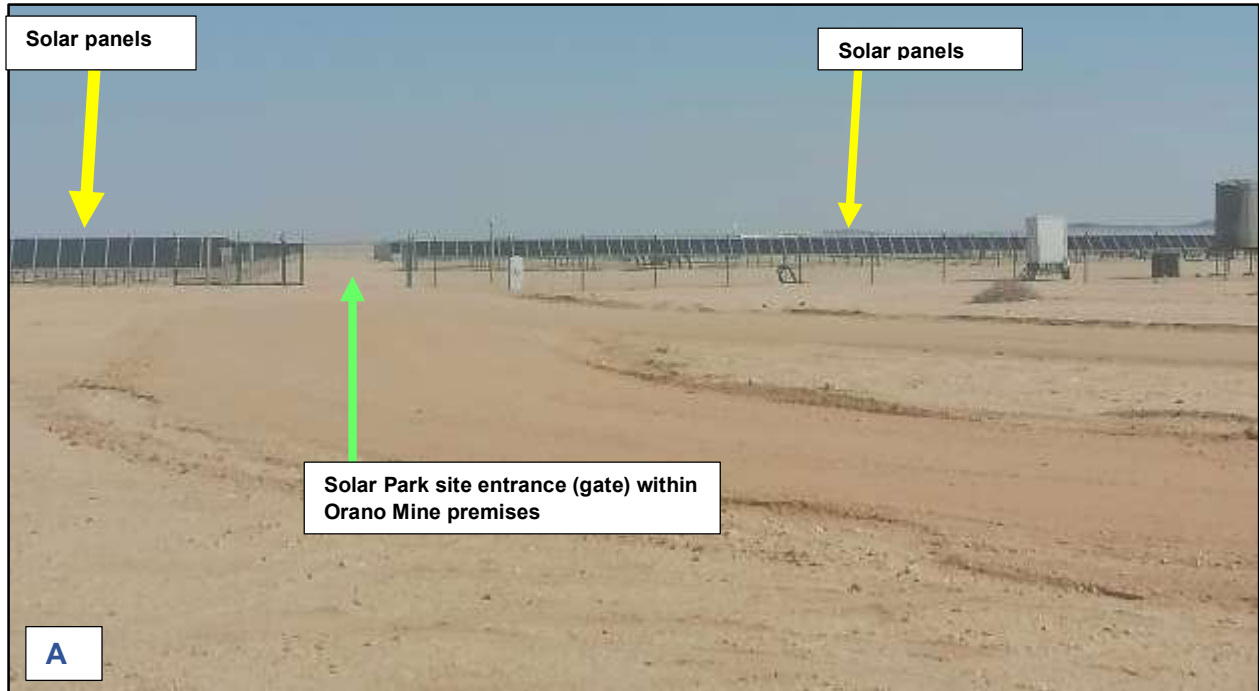


Figure 2-9: The fencing around the Solar Park Site; A- site entrance and B- Back side

## 2.2 The Proposed Activities (Amendments)

The proposed additional activities will include the establishment and operation of a storage structure to provide shelter for project spare parts onsite. The spare parts will be used to maintain/service the project parts and equipment. This is to ensure that there are no interruptions to the project operations, thus, maintaining operational productivity. The storage facility will be equipped with an ablution facility (toilet) with a waste (septic) tank that will be installed in the structure. The septic tank will be emptied offsite as regularly as needed (depending on the capacity or as prescribed by the Manufacturer).

Dust Management: during the construction, there might be an issue of localized dust emanating from certain construction works such as trenching to erect the structure. This might be aggravated during periods of strong winds and exposure of the site (bare area in the desert). To curb this, water will be used to suppress the emanating dust at such problematic site areas. However, this is very minimal as few vehicles travel to and from site and the short-term duration of the construction works, therefore, negligible.

The construction of the shelter facility is expected to be completed within eight (8) weeks, i.e., two months.

### 2.2.1 Supporting Resources and Services Infrastructure

The following resources and infrastructure will be needed for the setup of the storage facility onsite:

- Construction workers (staff) and accommodation: About five (5) people will be required for the construction of the structure. The workforce belonging to locally hired contractor will be commuting from Arandis, therefore no onsite accommodation will be required.
- Water: Water required for the construction works will be primarily for domestic, concrete mixing (where necessary). This water will be sourced from onsite water supply tanks.
- Power supply: One to two diesel powered generators will be used to supply power for the construction works. For the construction duration, there will be a fuel storage container with a volume less than 600 litres (not requiring a consumer installation permit). The construction vehicles will be refuelled elsewhere offsite (at the fuel service stations in Arandis). For the operational phase, the structure will be connected to the existing site power supply grid.
- Sanitation: The site is provided with portable toilets that are properly maintained and handled by the service provider. Therefore, the construction, operational and structure maintenance workforce will utilize the existing toilets onsite.
- Operational solid (general) waste (office/domestic waste and used wood and scrap metals): The solid waste generated from the construction of the shelter facility will be sorted and stored in the existing site waste drums. The waste will be later transported to the Arandis waste dumping site.

- Health and safety: All project workers will be well equipped with personal protective equipment (PPE) while performing constructing the shelter (storage) structure and associated infrastructure on site. The PPE will range from overalls, ear plugs, dust face masks, earplugs, gloves, hard hats and safety boots. The site is equipped with one fully equipped first aid kit and some personnel are trained on administering first aid.
- Management of accidental fire outbreaks: There are three serviced fire extinguishers onsite (last service being done end of March 2023).

The following chapter presents the national and international legal requirements that are applicable and relevant to the project.

### **3 LEGAL FRAMEWORK: OPERATIONAL PERMITTING AND LICENSES**

The project's activities are undertaken in a biophysical and social environment. These activities or some of them may even at minimum impact some of these environmental components. It is therefore necessary to consider the legislations and legal requirements governing the project and its associated activities.

The main legal framework presented herein is that of Namibia for the relevant project component under the scope of this document – detailed legislation that are applicable to the project are given in the EIA Report. The chapter also presents a summary of the relevant international legislations that are considered for the financing of such projects, specifically the International Finance Corporation (IFC) Performance Standards and the Equator Principles (EPs).

#### **3.1 Environmental Management Act No. 7 of 2007**

The Environmental Management Act No.7 of 2007 and its 2012 EIA Regulations aims to ensure that the potential impacts of the development on the environment are considered carefully and in good time; that all interested and affected parties have a chance to participate in the environmental assessments and that the findings of the environmental assessments are fully considered before any decisions are made about activities which might affect the environment.

The Act aims at promoting sustainable management of the environment and use of natural resources. The Environmental Management Act (EMA) is broad; it regulates land use development through environmental clearance certification and/or Environmental Impact Assessments. The Act provides for the clearance certification for “ (1) The construction of facilities for (a) the generation of electricity and (b) transmission and supply of electricity”.

### **3.2 Electricity Act No. 4 of 2007**

The Act provides information on the requirements for electricity generation, trading, transmission, supply, distribution, importation, and export. The Electricity Control Board (ECB) under the Ministry of Mines & Energy exercises control over the provision, use and consumption of electricity in Namibia; ensures efficiency and security of electricity provision; ensures a competitive environment in the electricity industry in Namibia; and promotes private sector investment in the electricity industry. The board provides for the requirements and conditions for obtaining licenses for the provision of electricity and to provide for other incidental matters.

**Implication for the proposed project:** The project involves the generation, supply, and transmission of electricity. If required, Sertum Energy will need to apply for the relevant license (for electricity transmission) prior to commencing with the operational activities.

Apart from the presented Namibian legislation in Table 3-1 and the fact that the project is funded by foreign investors, the proposed project will be obliged to comply with certain International Standards. These Standards are the:

- Equator Principles,
- IFC Performance Standards, and
- Good International Industry Practice (GIIP).

For the purpose of this EMP, Table 3-1 presents the information on the legal obligations (legislations, policies and guidelines) in terms of legislation where permitting and/or licensing that may be required from different applicable regulatory authorities as a requirement to the ECC.

Table 3-1: List of applicable legislation where required, permits or licenses for the PV Plant activities

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Environmental Management Act EMA (No 7 of 2007)	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).  Details principles which are to guide all EIAs.	<b>ECC Renewal (and amendment, if the need arises):</b> An ECC should be renewed every 3 years prior to its expiry date (as indicated on the new ECC format). The contact details at the Department of Environmental Affairs and Forestry (DEAF) are as follows:
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	The EMA and its regulations should inform and guide this EA process.  Details requirements for public consultation within a given environmental assessment process (GN No 30 S21).  The details the requirements for what should be included in an Environmental Scoping Report (GN No 30 S8) and an EIA report (GN No 30 S15) were already incorporated in the initial reports submitted for the expired ECC in 2015.	<b>Contact: Mr. Timoteus Mufeti: Environmental Commissioner</b>  Tel.: +264 61 284 2701  The project is already in its operational phase. Regardless, if necessary and required, constant consultations and engagements with the interested and affected parties (stakeholders) should be continued. In case of grievances raised by the neighbouring community to the Proponent, this should be addressed and resolved amicably.
Civil Aviation Act No. 6 of 2016	The height of the proposed masts that might be a threat to the nearest aerodrome site. Therefore, the Proponent should verify these with the Namibia Civil Aviation Authority (NCAA).	The contact details at the NCAA to verify and advice on possible solar panel glare in the area with regards to the aviation sector are as follow:  <b>Contact: Ms. Toska Sem: Executive Director of the Namibia Civil Aviation Authority</b>  Tel.: +264 83 235 2100



Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Convention on International Civil Aviation, Annex 14	<ul style="list-style-type: none"> <li>• Annex 14 to the Convention on International Civil Aviation.</li> <li>• Chapter 4: Obstacle restrictions and removal</li> <li>• Chapter 6: Visual aids and donating of obstacles</li> </ul>	The proposed new structures may be obstacles to some aerodromes in Namibia. Those that are close to existing aerodromes need to be assessed in accordance with the document. Visual aids to the new structures to make them visible to aircraft need to be applied in accordance with this Convention.
Soil Conservation Act (No 76 of 1969)	The Act provides for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources/resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that “No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area”	<p>If there is fuel stored or is intended to be stored on site, the relevant petroleum products storage licenses/permits should be applied for from the Petroleum Affairs at the Ministry of Mines and Energy</p> <p>Contact: <b>Mr. Carlo Mcleod:</b> Acting Deputy Director of Petroleum Affairs &amp; Deputy Director: Compliance, Regulations and Economics</p> <p>Tel: +264 61 284 8291</p>
Communal Land Reform Act 5 of 2002	To provide for the allocation of rights in respect of communal land; to establish Communal Land Boards; to provide for the powers of Chiefs and Traditional Authorities and boards in relation to communal land; and to make provision for incidental matters	The project site is in a communal area, therefore future changes on the site (that may overlie communal or even private lands), the Proponent should ensure proper consultations with the relevant authorities (land custodians), property owners and that the project activities comply with the regulations provided in the Act.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
		<b>If required, the relevant authorisation should be obtained.</b>
The National Heritage Act (No. 27 of 2004)	The Act extends the protection of archaeological and historical sites to private and communal land and defines permit procedures regarding activities at such sites.	If heritage resources (e.g. human remains, etc.) are discovered at some point on and or around the site, these should be reported to the National Heritage Council (NHC) of Namibia for relocation.  <b>Contact: Mrs. Erica Ndalikokule (Director: NHC)</b>
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	Tel: +264 61 301 903
Pollution Control and Waste Management Bill	The bill aims to “prevent and regulate the discharge of pollutants to the air, water and land” Of particular reference to the Project is: Section 21 “(1) Subject to sub-section (4) and section 22, no person shall cause or permit the discharge of pollutants or waste into any water or watercourse.” Section 55 “(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment.”	The Project should make it mandatory that all their site waste produced as a result of their activities, directly or indirectly is managed in a manner that do not cause environmental threat and risk both to the surroundings and the local communities.  <b>No permit or license required.</b>
Public Health Act (No. 36 of 1919)	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.  <b>No permit or license required.</b>
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Public and Environmental Health Act No. 1 of 2015	To provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.	
Forestry Act 12 of 2001	Section 10 (1) set out the aim of the forest management as to: The purpose for which forest resources are managed and developed, including the planting of trees where necessary in Namibia is to conserve soil and water resources, maintain biological diversity and to use forest produce in a way which is compatible with the forest's primary role as the protector and enhancer of the natural environment.	To remove protected plant species such as Camelthorn trees, which are known to occur within the project sites, a permit should be obtained from the nearest Forestry office (MEFT) prior to removing them.  <b>Contact: Mr. Johnson Ndokosho (Director: Forestry)</b>  Tel: +264 61 208 7663
Soil Conservation Act 76 of 1969	The Act established to consolidate and amend the law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources.	Site soils should be conserved and prevent or minimize erosion and pollution during operations should be implemented.  <b>No permit or license required.</b>
Road Traffic and Transport Act, No. 22 of 1999	Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.  Mitigation measures should be provided for if the roads and traffic impact cannot be avoided.	The relevant access road permits must therefore be applied for from the Ministry of Works and Transport's Roads Authority.  <b>Contact: Mr. Eugene de Paauw (Specialist Road Legislation, Advice &amp; Compliance)</b>  Tel: +264 61 284 7027
Labour Act (No. 6 of 1992)	The effective implementation of the Labour Act No. 6 of 1992, specifically its Regulations, No. 156 Labour Act, 1992: Regulations relating to the health and safety of employees at work.	The Proponent should ensure that the project operations, and maintenance works, do not compromise the safety and welfare of workers.  <b>No permit or license required.</b>

### 3.1 Applicable International Standards and Policies

In addition to the Namibian environmental and social legal requirements detailed above, compliance with various International Standards will be required for the Sertum Energy Project. These are described in Subsections below.

#### 3.1.1 The Equator Principles

A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), in an attempt to establish an International Standard with which companies must comply with in order to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors. These principles are an attempt to: '...encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.'

The ten (10) Equator Principles governing the projects are listed below:

- Principle 1: Review and Categorization
- Principle 2: Environmental and Social Assessment
- Principle 3: Applicable Environmental and Social Standards
- Principle 4: Environmental and Social Management System and Equator Principles Action Plan
- Principle 5: Stakeholder Engagement
- Principle 6: Grievance Mechanism
- Principle 7: Independent Review
- Principle 8: Covenants
- Principle 9: Independent Monitoring and Reporting, and Principle 10: Reporting and Transparency

#### 3.1.2 International Finance Corporation (IFC) Standards

The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy.

As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project owner to meet throughout the life of an investment. These IFC are checked against the project as shown in Table 3-2.

Table 3-2: The IFC Performance Standards (PSs) analysis against the site operations

IFC PS	Relevant Provisions of the IFC PS	Implications for the project / Actions Taken
PS1	Assessment and Management of Environmental and Social Risks and Impacts:	The EIA for the project was conducted first in 2013 has been undertaken in accordance with this, whereby the project has been advertised in the national media outlets, consultation meetings held and comments noted down for incorporation into the Assessment Report and Environmental & Social Management Plan together with identified potential adverse/negative and positive environmental and social impacts.
PS2	Labour and Working Conditions	The EIA Study assessed the potential impacts of the project activities on the workforce health and safety in accordance with the Labour Act (No. 6 of 1992) and fair labour working conditions, including compensations, i.e., no compromising of the labour and working welfare of workers as required in the EMP.
PS3	Resource Efficient and Pollution Prevention and Management	The EIA Study assessed the usage of resources such as water, soils and power resources required for the project during that duration. The appropriate measures to manage and mitigate the impacts associated with the project activities have been provided under the EMP for implementation.
PS4	Community Health and Safety	The potential impacts of the project activities on the project crew as well as communities' health and safety in accordance with the Labour Act (No. 6 of 1992) have been assessed and mitigation measures provided accordingly in the EMP, i.e., ensuring that the project activities do not compromise the safety and welfare of workers and communities.
PS5	Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	The PV site is within an Orano Mine which falls under the communal land. Land use agreement and consent was agreed upon and issued to Sertum Energy Namibia.
PS6	Biodiversity Conservation and Sustainable Management of Living Natural Resource	The EIA Study undertook a baseline assessment of the fauna and flora in the project area. The relevant management and mitigation measures have been provided thereto in the EMP.

IFC PS	Relevant Provisions of the IFC PS	Implications for the project / Actions Taken
PS7	Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities	The site is within a communal land in a desert environment with very little to no human settlement in proximity. Therefore, this was not applicable for the project.
PS8	Cultural Heritage	An Archaeological & Cultural Heritage Impact Assessment (AHIA) was not done for EIA Study, given the non-occupancy of the area. Regardless, Archaeological and heritage management action measures were provided in the updated EMP and this amended EMP for implementation, particularly for the earthworks (inadvertently unearthing of archaeological resources).

### 3.1.3 Good International Industry Practice (GIIP)

In addition to legislation provided by local Government bodies, the World Bank Group and IFC have provided a range of technical reference documents with general and industry-specific examples of Good International Industry Practice ('GIIP'). The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of GIIP 1. These industry sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors. These EHS guidelines can be considered relevant to the proposed project in terms of local transmission and distribution to the adjacent NamPower Substation. These general Guidelines, as applicable to the proposed project, have been incorporated into the Sertum Energy Draft Environmental Management Plan (EMP).

The legal requirements above have been listed and explained as per their relevance to the project. The project is being carried in an environment that is sensitive in terms of its biophysical and social features. The potential and known impacts that have been assessed in the initial environmental report of the project were identified based on these environmental components/features in terms of their sensitivities to the project activities.

To continued effective implementation of the EMP and subsequent environmental protection and management, the EMP implementation responsibilities need to be assigned to all vital parties that are involved in the project. This is to ensure that all onsite personnel are aware of what is required of them throughout the project phases. These roles and responsibilities are presented under Chapter 5.

## 4 EMP IMPLEMENTATION ROLES AND RESPONSIBILITIES

The chapter gives a presentation of the roles of different parties involved in the project cycle and their respective responsibilities towards the implementation of the EMP.

This EMP informs all relevant parties listed below and everyone employed at the site as to their duties in the fulfilment of the legal requirements for the operation of the quarry. This is done with reference to the prevention and mitigation of anticipated potential negative environmental impacts. All parties should note that obligations imposed by the EMP are legally binding in terms of the Environmental Clearance granted by the relevant environmental permitting authority, to:

- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national, and/or international.

- Verify environmental performance through information on impacts as they occur.
- Provide feedback for continual improvement in environmental performance.
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels.
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project.
- Create management structures that addresses the concerns and complaints of interested and affected parties (I&APs) with regards to the development/project; and
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity.

#### **4.1 Project Manager (Site Manager or Operator)**

The Proponent is ultimately responsible for the implementation of the project EMP during all project's phases (activities referred to in the initial project EMP and herein). In the case that the Proponent may not be able to undertake this responsibility themselves, they should assign this responsibility to a suitably qualified individual to act as their Representative (Project Manager/Site Operator) or Safety, Health and Environmental (SHE) Officer / Environmental Control Officer (ECO) or simply Environmental Officer. The delegated responsibility for the effective implementation of the EMP will rest on the following key individual who may be fulfilled by the same person referred to as the ECO. The Proponent/Project Manager's responsibilities include:

- Managing the implementation of the EMP and updating and maintaining it when necessary.
- Management and monitoring of individuals and/or equipment on-site in terms of compliance with the EMP.
- The implementation of and compliance with the environmental management measures proposed in this document.
- Ensuring compliance with relevant environmental and related authorisations and license conditions.
- Identifying and appointing of appropriately qualified specialists (were necessary) to undertake the programmes in a timeous manner and to acceptable standards.

Alternatively, the Proponent may delegate an SHE Officer or they may appoint an external ECO/SHE Officer to ensure EMP compliance throughout the project life cycle.



## 4.2 Construction Contractor and Subcontractor(s)

The contractor representatives or site project manager (as appropriate) will:

- Ensure that the relevant commitments contained in the EMP measures are adhered to.
- Compile relevant procedures and method statements for approval by the site manager / operator prior to initiation of activities.
- Ensure relevant staff is trained in procedures.
- Maintain records of all relevant environmental documentation.

## 4.3 Safety, Health & Environmental (SHE) Officer

The Proponent should assign the responsibility of overseeing the implementation of the whole EMP on the ground for the operations to a designated member of staff or external qualified and experienced person, referred to in this EMP as the Environmental Control Officer (ECO) / Safety, Health and Environmental (SHE) Officer. The ECO will have the following responsibilities:

- Make sure that the provisions of the EMP as well as the environmental authorization are complied with throughout the project cycle. The ECO must be fully conversant with the Environmental Impact Assessment, EMP/Programme and environmental legislations, specifically the EMA No. 7 of 2007 and its Regulations.
- Issue instructions to the Proponent where environmental considerations call for action to be taken.
- Submit regular written reports, ensuring that activities on site comply with all relevant environmental legislation, monitoring and verifying that adverse environmental impacts are kept to a minimum.
- Management and facilitation of communication between Sertum Energy and Interested and Affected Parties (I&APs).
- Conducting Environmental bi-annually site inspections for the operation and maintenance of all areas with respect to the implementation of the EMP (monitor/audit the implementation of the EMP).
- Advising the Proponent on the removal of person(s) and/or equipment not complying with the provisions of the EMP.
- Making recommendations to the Proponent with respect to the issuing of fines for contraventions of the EMP.
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.
- Maintain records of all relevant environmental documentation.

#### 4.4 Project Specialists

Specialized skills that may be required on an ad-hoc basis or in terms of environmental support services and independent compliance monitoring and auditing or maintenance, the Sertum Energy will need to contract or appoint suitable/relevant professionals, as and when required.

The above-listed environmental management parties on site will be required to implement the respective management (action plans) measures given under the next chapter.

### 5 ENVIRONMENTAL MANAGEMENT ACTION PLANS

This chapter presents the potential impacts that were identified when the current environmental clearance was issued and renewed, the environmental management actions (measures) recommended and the implementation checklist (status of EMP implementation). It is under this chapter that the new or updated EMP implementation roles and responsibilities and updated and additional environmental management measures going forward are also covered.

#### 5.1 Key Identified Potential Environmental Impacts

The potential impacts anticipated for the project (current and proposed amendments) onsite are listed below. Mitigation measures or management action plans were also made for the negative covered impacts to maximize the positive ones. The impacts that had been identified and managed on site are as follows:

##### 5.1.1 Positive Impacts:

- Production of renewable energy
- Contribution to local and national rates, levies, and taxes
- Continued employment opportunities for the site workers and few new opportunities at the spare parts facility (structure) for its establishment and operations.
- Procurement of local goods and services procurement opportunities for businesses to generate income
- Skills development and training in the renewable energy sector.

##### 5.1.2 Negative impacts

Potential negative impacts associated with the amendments of the EMP (in 2023) are as follows:

- Impact on local biodiversity (fauna and flora) during earthworks and habitat disturbance: *minimal impact due to localized nature of the proposed structure and short-term.*
- Environmental pollution (solid waste and wastewater/septic tank): *cumulative impact (ad-on facility to existing activities).*

- Occupational health and safety risks: *likely impact, but short-term during construction and long-term and cumulative during the operation of the shelter structure.*
- Visual impact on travellers on the nearby roads: *cumulative impact (ad-on facility to existing activities).*
- Impact on archaeological and cultural heritage resources: *likely during earthworks when establishing the facility/structure, but localized.*
- Site soils (erosion and pollution) during structure establishment: *short-term, and localised impact.*
- Air quality (dust emanating from construction activities can compromise the surrounding air quality during facility establishment): *short-term and insignificant impact.*

#### Potential negative impacts identified and as updated in the 2021 EMP

- Birds (avifauna) impact: Birds (avifauna) impact (PV Plant impact on birds, collision of birds with the project associated powerline, electrocution of birds on the powerline, and bird nesting activity on power line structures and panels)
- Risks of fire (accidental fire outbreaks), waste generation, water usage, dust, soil and water resources contamination, impact on biodiversity (fauna and flora)
- Impact on services infrastructure (infrastructure utilities), visual (aesthetic), traffic (vehicular) safety, Health, safety & security and grievances.

## **5.2 The Amended Environmental Management and Mitigation Measures**

The implementation of the EMP and compliance during the validity period of the current ECC has been monitored from March 2022 to date. However, for the amendment of the ECC which requires an updated/amended EMP, the updated management and mitigation measures to mainly reflect the proposed amendments to the project activities (operations and maintenance) are provided in Table 5-1.

Table 5-1: The Environmental and Mitigation Measures for the Proposed Construction (New Amendments) and Operational & Maintenance Phase

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
<b>PROPOSED CONSTRUCTION (AMENDMENTS) PHASE</b>				
EMP and training Implementation	EMP required licenses, agreements and permits	<ul style="list-style-type: none"> <li>-All contractors and subcontractors for the establishment of the shelter structure and associated infrastructures should be trained on the EMP (particularly environment, occupational health and safety).</li> <li>-Ensure that the contents of the EMP are well understood by the contractor, subcontractors, employees (workers), and all personnel who will be involved in the establishment of the onsite.</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent</li> <li>-Contractor</li> </ul>	<ul style="list-style-type: none"> <li>-All contracts, permits, certificates and other legal documents obtained and on file.</li> <li>-The contractors (and their employees or subcontractors) are trained on the EMP, their responsibilities and its implementation.</li> <li>-The contractors/employees are aware of the EMP and understand its contents</li> </ul>
Labour and Recruitments	Appointments of contractor and contract workers	<ul style="list-style-type: none"> <li>-Appointment of contractors and employees and enter into an agreement which includes the EMP.</li> <li>-Ensure employment of local workers and maintenance contactors (from Arandis and immediate areas).</li> <li>-The contractors should be sourced from Arandis, and if not available in Arandis, they should be hired from any nearby Town in Erongo Region</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent</li> <li>-Contractor</li> </ul>	<ul style="list-style-type: none"> <li>- The contractors for construction works are from Arandis or if not available, from any nearby Town in the Erongo</li> <li>-Recruitment of local people for any unskilled and semi-skilled jobs, and skilled where available.</li> </ul>
Waste generation and management	There is a generation of different water (solid, hazardous and wastewater) on site.	<ul style="list-style-type: none"> <li>-The waste should be stored in appropriate containers onsite and disposed of at approved and appropriate waste facilities in Arandis.</li> <li>-The site should be visually inspected weekly.</li> <li>-A register of waste produced, and disposal methods should be maintained onsite.</li> </ul>	<ul style="list-style-type: none"> <li>-Contractor</li> <li>-Site Manager / Operator</li> <li>-Environmental Officer</li> </ul>	<ul style="list-style-type: none"> <li>-There are sufficient waste containers for each waste type</li> <li>-Waste register is kept onsite</li> <li>-Workers are aware of the waste management systems onsite</li> </ul>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<ul style="list-style-type: none"> <li>-Scrap metal and wood should be properly sorted and stored at a designated area onsite for recycling and or disposal at the waste site.</li> <li>-No waste should be buried or disposed of on and around the site. Use allocated waste containers.</li> </ul>		
Wastewater (Sewage) management	Wastewater and sewage generated by construction workers.	<ul style="list-style-type: none"> <li>-Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with wastewater discharge standards to not contaminate surrounding soils and water resources.</li> <li>-No open defecation is allowed on and around the site.</li> <li>-Sewage should be stored as per the portable chemical toilets supplied on site and regularly disposed of accordingly and appropriately.</li> <li>-If contractors cannot use existing onsite toilets, provide sufficient toilet facilities (mobile/portable chemical toilet).</li> <li>-Chemical toilets should be emptied according to the manufacturer's specifications.</li> <li>-A reputable sewage removal contractor should be appointed to handle the sewage during removal to make sure that it does not spill on the soils during transfers to contaminate soils.</li> </ul>	-Contractor	<ul style="list-style-type: none"> <li>-Adequate toilet and basic ablution facilities on site</li> <li>-Chemical toilets are made available and emptied as per instructions</li> <li>-Sewage removal is done by the responsible waste removal operator</li> <li>-Waste treatment agents/chemicals.</li> </ul>
Soils and water resources	Soils and water resources pollution	<ul style="list-style-type: none"> <li>-Spill control preventive measures should be in place on site to management soil contamination.</li> </ul>	-Contractor	<ul style="list-style-type: none"> <li>-No visible oil spills on the ground or pollution spots.</li> </ul>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-Workers should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel handling procedures.</p> <p>-Develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.</p> <p>-Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training.</p> <p>-Machines, and vehicles should be equipped with drip trays to contain possible oil spills when operated on site.</p> <p>-Accidentally polluted soil should be removed immediately and put in a designate waste type container for later disposal.</p> <p>-Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.</p> <p>-Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are</p>	<p>-Site Manager / Operator</p> <p>-Environmental Officer</p>	<p>-There are drip trays for vehicles and machines</p> <p>-Availability of sufficient waste containers</p> <p>-Non-permeable material are placed on the surface at areas where hydrocarbons and potential pollutants are utilized.to cover the ground</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		prevented from contaminating soil or water resources.		
Management system in Safety, Health and Environment (SHE)	Provision and effective implementation of SHE management systems	<ul style="list-style-type: none"> <li>-Make provisions to have an SHE Coordinator to implement the EMP and oversee occupational health and safety onsite.</li> <li>-Risk management / mitigation / emergency Response Plan and SHE Manuals such as Induction pamphlets should be in place and updated as deemed necessary.</li> <li>-There should be adequate protection and liability insurance cover for incidents.</li> <li>-Ensure compliance with the provisions of all relevant safety standards.</li> <li>-There should be procedures, equipment, and materials required for emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent</li> <li>-Site Manager / Operator</li> </ul>	<ul style="list-style-type: none"> <li>-The site audits are conducted by the SHE/Environmental Officer</li> <li>-Documentation on file</li> <li>-Personal Protection Equipment (PPE) on site and appropriately worn by contractors</li> <li>-Signage related to restricted areas, dangerous areas, and PPE requirements are on site.</li> <li>-Emergency response material on site</li> </ul>
Health, Safety and Security	Occupational health and safety	<ul style="list-style-type: none"> <li>-Appropriate signage and warnings should be erected at risky or danger prone site areas.</li> <li>-All workers should be equipped with appropriate and functioning PPE. The PPE should be replaced as soon as necessary.</li> <li>-An SHE Inductions should be provided to all construction contractors, their works and related site visitors.</li> <li>-No personnel (contractor and or their worker) will be allowed onsite when under the influence of alcohol, drugs or any narcotic substance.</li> </ul>	<ul style="list-style-type: none"> <li>-Contractor</li> <li>-Site Manager / Operator)</li> </ul>	<ul style="list-style-type: none"> <li>-The necessary occupation health and safety measures are taken into place as required.</li> <li>-A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not re-occur.</li> <li>-Inventory of all safety and health stock to be reported on a weekly basis.</li> </ul>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<ul style="list-style-type: none"> <li>-Sufficient training should be provided to workers on how to operate equipment or machinery to avoid injuries.</li> <li>-A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not repeat themselves.</li> <li>-Adhere to Health and Safety Regulations pertaining to personal protective clothing, first aid kits, warning signs, etc.</li> <li>-Ensure that adequate emergency facilities, including first aid kits, are available on site and knowledge of administering it is provided to workers.</li> <li>-All information and reporting to be included in environmental reports.</li> </ul>		
Accidental Fires	Outbreak of uncontrolled or accidental fires due to the use of machinery or presence of open fires made by workers onsite.	<ul style="list-style-type: none"> <li>-Firefighting measures as per the Material Safety Data should be provided, implemented, and adhered to.</li> <li>-The site should be equipped with sufficient firefighting resources. Regular surveys of the fire-fighting equipment should be carried out.</li> <li>-The fire extinguishers should be properly serviced, service date plans clearly indicated.</li> <li>-Open fires are strictly prohibited onsite.</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager / Operator</li> <li>-Contractor</li> </ul>	<ul style="list-style-type: none"> <li>-Supervision of work and reports of safe and unsafe practice brought to the attention of the health safety and environmental officer.</li> <li>-Any incidents reported recorded together with steps taken to mitigate the impacts.</li> <li>-Fire extinguisher serviced as recommended by the Supplier / Manufacturer, the next service plans clearly indicated and provided to the Site Operator for record keeping.</li> </ul>



Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-All personnel must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including waste, dry wood and hydrocarbon-soaked soil from the vicinity of the site. Regular inspections should be carried out to check and remove these materials at the site.</p> <p>-A responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.</p>		
Soils	Physical disturbance of sensitive desert land (soils) by the movement of operational vehicles and machinery and physical site works	<p>-Adjacent areas to the project site and unused areas within the site areas should not be disturbed.</p> <p>-The use of existing tracks such as access roads is essential to minimize the footprints on the already sensitive desert soils over time.</p> <p>-Ensure that when areas outside the project site boundaries or structure working sites are disturbed by project related activities, rehabilitation should be conducted immediately once the activity has been completed.</p>	<p>-Site Manager / Operator</p> <p>-Contractor</p> <p>-Environmental Officer</p>	<p>-Little to no visible unnecessary soil disturbance on site.</p> <p>-Vehicles making use of provided access roads to and within the site</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-Maintain the channel that act as a diversion of runoff (rainwater flowing down the panels) to the drainage point where the water can freely flow elsewhere in the area to recharge groundwater resources and without eroding a significant amount of site soils.</p>		
Water Resources Use	<p>Over-utilization and wastage of water resources</p> <p>The water is stored in an onsite tank. Water is currently used for drinking, ablution and when required. Sustainable use of water resources is crucial.</p>	<p>-Water should be used efficiently, and recycling and re-using of water onsite should be encouraged.</p> <p>-Water conservation awareness and saving measures training should be provided to all the Site Personnel so that they understand the importance of conserving water and become accountable.</p> <p>-The monthly water usage from the site water meters should be recorded in an Excel Sheet. These records are kept onsite and updated.</p>	<p>-Site Manager / Operator</p> <p>-Environmental Officer</p>	<p>-Office and restroom taps are turned off when not in use (not left running)</p> <p>-The solar panel cleaning taps are only turned on when cleaning is done.</p> <p>-There is no sign of water wastage nor tank or pipeline leaks onsite.</p>
Dust and gaseous emissions	<p>Dust may be generated due to increased traffic to and from the site for deliveries and removals. This might be aggravated during periods of strong winds which occurs regularly in Namibia during the winter months.</p>	<p>-Site Personnel should be issued with dust masks for health reasons when needed.</p> <p>-The vehicle speed should be limited to 40km/hr when driving on and around the site to prevent dust generation.</p> <p>-Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers, where they are exposed to dust.</p>	<p>-Project Manager</p> <p>-Plant Operator</p> <p>-Safety Officer</p>	<p>-Regular visual inspection.</p> <p>-Complaint related to dust emissions (poor air quality owing to the project) register kept on site.</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-A reasonable amount of water should be to suppress dust from problematic areas onsite.</p>		
<p>Vehicular Traffic use and Safety</p>	<p>The site is located off the main B2 road and project activities may potentially have some impact on the movement of traffic to the site (on the B2 and site access roads) when transporting material, supplies and equipment.</p>	<p>-Construction vehicles should only make use of existing tracks leading to the site. Unnecessary new tracks or roads should not be created.</p> <p>-The vehicle drivers should be in possession of valid and appropriate driver’s licenses.</p> <p>-No person shall drive or use any vehicle on site whilst under the influence of alcohol or any other narcotic substance or in such a way that is dangerous to human life or that may cause damage to any property or the environment.</p> <p>-Proper traffic management systems should be put in place.</p> <p>-The maximum speed limit onsite and access roads should be 40km/hr.</p> <p>-Drivers should adhere to the speed limit to avoid running over reptiles and amphibians or create dust.</p> <p>-Appropriate road signage and warnings should be erected or put up at the site access roads.</p> <p>-Traffic management plans on and around the site should be developed when necessary.</p>	<p>-Contractor</p> <p>-Site Manager / Operator</p>	<p>-A register of trucks arriving and leaving the site is kept.</p> <p>-A report is compiled every month of the daily number of trucks accessing the sites.</p> <p>-Any complaints received regarding traffic issues should be recorded in the report together with steps taken to mitigate the impacts.</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
Visual Impact	This is an impact that affects the aesthetic appearance of the construction site (shelter structure and associated infrastructures)	-The colour of the storage (shelter) structure and its roof should not contrast the colour of the existing structures and infrastructures onsite such that it causes a visual nuisance.	-Contractor  -Site Manager / Operator	-A Visual complaints register kept on site and to be acted upon when the need arises  -Complaints must be investigated and, if appropriate, acted upon.  -The current colour of the structure and associated structures is maintained
Archaeological and Cultural Heritage Impact	Sites with archaeologically or culturally important significance might be uncovered during excavations.  These can include graves, stone walls, or cultural artefacts.	-Upon discovery of such sites or objects at some point on site or surroundings, it must be reported to the National Heritage Council (NHC) of Namibia for further action/handling and permit issuance for possible conservation.  -The destruction, damage or displacement of such sites is not allowed but should be reported to the NHC	-Site Manager / Operator  -Environmental Officer	-Record of any discoveries and proof of notifications to authorities (National Heritage Council) on file.
<b>OPERATIONAL AND MAINTENANCE PHASE</b>				
EMP and training Implementation	EMP required licenses, agreements and permits	-Apply for the necessary permits or licenses from the various ministries, local authorities, and any other bodies that govern the operations of the project.  -Ensure that the contents of the EMP are understood by the contractor, subcontractors, employees (workers), and all personnel who will be present on site.	-Proponent (Site Manager / Operator)	-All contracts, permits, certificates and other legal documents obtained and on file.  -The Electricity Generation License has been issued by Electricity Control Board (ECB).  -The Power Purchase Agreement (PPA) has been entered to with NamPower and on file and Contracts on file

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
ECC Renewal every three years	Environmental Clearance Certificate (ECC) Renewal	<ul style="list-style-type: none"> <li>-Appoint an Independent Environmental Consultant to update the EMP and apply for renewal of the Environmental Clearance Certificate prior to expiry of the valid ECC.</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent</li> <li>-Site Manager / Operator</li> </ul>	<ul style="list-style-type: none"> <li>-The Environmental Clearance Certificate is renewed with the Environmental Commissioner on time.</li> <li>-The ECC is valid and Bi-annual Environmental audits are conducted by an independent Environmental Consultant.</li> </ul>
Labour and Recruitments	Appointments of site workers and necessary maintenance contractors such as grass clearing and waste removal	<ul style="list-style-type: none"> <li>-Appointment of contractors and employees and enter into an agreement which includes the EMP.</li> <li>-Ensure that the contents of the EMP are understood by the employees, contractors, and all personnel present on site.</li> <li>-For operational and maintenance activities, ensure the employment of local workers and maintenance contractors.</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent: Human Resources Department</li> </ul>	<ul style="list-style-type: none"> <li>-The contractors and employees are aware of the EMP and understand its contents.</li> </ul>
Management system in Safety, Health and Environment (SHE)	Provision and effective implementation of SHE management systems	<ul style="list-style-type: none"> <li>-Make provisions to have an SHE Coordinator to implement the EMP and oversee occupational health and safety onsite.</li> <li>-Risk Management / Mitigation / Emergency Response Plan and SHE Manuals such as Induction pamphlets should be in place and updated as deemed necessary.</li> <li>-There should be adequate protection and liability insurance cover for incidents.</li> <li>-Ensure compliance with the provisions of all relevant safety standards.</li> <li>-There should be procedures, equipment, and materials required for emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent</li> </ul>	<ul style="list-style-type: none"> <li>-There Safety and Environmental Officers conduct respective audits onsite</li> <li>-Documentation on file</li> <li>-Personal Protection Equipment (PPE) on site and appropriately worn by site workers</li> <li>-Signage related to restricted areas, dangerous areas, and PPE requirements are on site.</li> <li>-Emergency response material on site</li> </ul>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
Dust and gaseous emissions	Dust generated during the operations is expected from untarred roads, particularly on windy days from exposed desert soils.	<ul style="list-style-type: none"> <li>-Regular dust suppression on unpaved access roads should be done, if construction is carried out during winter and windy months.</li> <li>-Vehicles and machinery should not be left idling when not in use.</li> <li>-Vehicles should be driven at 40km/hr to avoid the generation of dust from the unpaved site roads.</li> <li>-A complaints register of harmful gases emitted from site related activities (if any) is maintained.</li> </ul>	<ul style="list-style-type: none"> <li>-Contractor</li> <li>-Site Manager / Operator</li> </ul>	<ul style="list-style-type: none"> <li>-Dust suppression and preventive measures are in place and implemented</li> </ul>
Reporting system on monitoring aspects of construction as outlined herein	Reporting	<ul style="list-style-type: none"> <li>-Establish a reporting system to report on aspects of construction.</li> <li>-Keep monitoring reports (monthly and bi-annual reporting) on file for submission with ECC renewal applications, where needed.</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager / Operator</li> </ul>	<ul style="list-style-type: none"> <li>-Construction (monthly) reports are prepared for incorporation into the Bi-annual reports to be submitted to the Office of the Environmental Commissioner</li> </ul>
Vehicular Traffic use and Safety	The site is located off the main B2 road and operational activities may potentially have some impact on the movement of traffic to the site (on the B2 and site access roads) when transporting material, supplies and equipment.	<ul style="list-style-type: none"> <li>-The project activities and vehicles should only make use of the existing access road to the site and avoid creation of new tracks.</li> <li>-The vehicle drivers should be in possession of valid and appropriate driver's licenses.</li> <li>-No person shall drive or use any vehicle on site whilst under the influence of alcohol or any other narcotic substance or in such a way that is dangerous to human life or that may cause damage to any property or the environment.</li> <li>-Proper traffic management systems in place.</li> <li>-Adherence to speed limit to avoid running over reptiles and amphibians.</li> </ul>	<ul style="list-style-type: none"> <li>-Project Manager / Site Operator</li> </ul>	<ul style="list-style-type: none"> <li>-A register of trucks arriving and leaving the site is kept.</li> <li>-A report is compiled every month of the daily number of trucks accessing the sites.</li> <li>-Any complaints received regarding traffic issues should be recorded in the report together with steps taken to mitigate the impacts.</li> </ul>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-Appropriate road signage and warnings should be erected or put up at the site access roads.</p> <p>-Existing tracks leading to the site should be used and unnecessary new tracks or roads should not be created.</p> <p>-Traffic management plans on and around the site should be developed when necessary.</p>		
Water Resources Use	<p>Over-utilization and wastage of water resources</p> <p>The project activities utilize water supplied from the site connections supply scheme. Therefore, sustainable use of water resources is crucial.</p> <p>The water is stored in an onsite tank. Water is currently used for drinking, ablution and when required, cleaning of solar panels.</p>	<p>-Water should be used efficiently, and recycling and re-using of water onsite should be encouraged.</p> <p>-Water conservation awareness and saving measures training should be provided to all the Site Personnel so that they understand the importance of conserving water and become accountable.</p> <p>-The monthly water usage from the site water meters should be recorded in an Excel Sheet. These records should be kept onsite and updated monthly.</p>	<p>-Project Manager</p> <p>-Plant Operator and Environmental Officer</p>	<p>-Office and restroom taps are turned off when not in use (not left running)</p> <p>-The solar panel cleaning taps are only turned on when cleaning is done.</p> <p>-There is no sign of water wastage nor tank or pipeline leaks onsite.</p>
Accidental Fires	<p>Outbreak of uncontrolled or accidental fires due to the use of machinery or presence of open fires made by workers onsite.</p>	<p>-Firefighting measures as per the Material Safety Data should be provided, implemented, and adhered to.</p>	<p>-Project Manager</p> <p>-Plant Operator</p> <p>-SHE Officer</p>	<p>-Supervision of work and reports of safe and unsafe practice brought to the attention of the health safety and environmental officer.</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-The Site should be equipped with sufficient firefighting resources. Regular surveys of the fire-fighting equipment should be carried out.</p> <p>-The fire extinguishers should be properly serviced, service date plans clearly indicated.</p> <p>-Open fires are strictly prohibited onsite.</p> <p>-All personnel must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including waste, dry wood and hydrocarbon-soaked soil from the vicinity of the site. Regular inspections should be carried out to check and remove these materials at the site.</p> <p>-A responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.</p>		<p>-Any incidents reported recorded together with steps taken to mitigate the impacts.</p> <p>-Fire extinguisher serviced as recommended by the Supplier / Manufacturer, the next service plans clearly indicated and provided to the Plant Operator for record keeping.</p>
Health, Safety and Security	Mishandling of different operational equipment, materials and tools may lead to injuries and health or life-threatening risks	<p>-All Health and Safety standards specified in the Labour Act should be complied with. The responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site.</p> <p>-Appropriate signage and warnings should be erected or put up at risky or danger prone site areas, if any.</p>	<p>-Project Manager</p> <p>-Plant Operator</p> <p>-Safety Officer</p>	<p>-A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not re-occur.</p> <p>-Inventory of all safety and health stock to be reported on a weekly basis.</p>



Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-Ensure all workers are issued with protective eyewear and applicable PPE when working with photovoltaic panels or handling other materials and equipment on site.</p>		
Soils	<p>Physical disturbance of sensitive desert land (soils) by the movement of operational vehicles and machinery and physical site works</p>	<p>-Project site areas and unused areas within the site areas should not be disturbed.</p> <p>-The use of existing tracks such as access roads is essential to minimize the footprints on the already sensitive desert soils over time.</p> <p>-Areas outside the project site boundaries are disturbed by project related activities, rehabilitation should be conducted immediately once the activity has been completed.</p> <p>-Maintain the channel that act as a diversion of runoff (rainwater flowing down the panels) to the drainage point where the water can freely flow elsewhere in the area to recharge groundwater resources and without eroding a significant amount of site soils.</p>	<p>-Project Manager</p> <p>-Plant Operator</p> <p>-Environmental Officer</p>	<p>-Little to no visible unnecessary soil disturbance on site.</p> <p>-Vehicles making use of provided access roads to and within the site</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
Dust and gaseous emissions	Dust may be generated due to increased traffic to and from the site for deliveries and removals. This might be aggravated during periods of strong winds which occurs regularly in Namibia during the winter months.	<ul style="list-style-type: none"> <li>-Site Personnel are to be issued with dust masks for health reasons when needed.</li> <li>-The vehicle speed should be limited to 40km/hr when driving on and around the site to prevent dust generation.</li> <li>-Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers, where they are exposed to dust.</li> <li>-A reasonable amount of water should be to suppress dust from problematic areas onsite.</li> </ul>	<ul style="list-style-type: none"> <li>-Project Manager</li> <li>-Site Manager / Operator</li> <li>-Environmental / Safety Officer</li> </ul>	<ul style="list-style-type: none"> <li>-Regular visual inspection.</li> <li>-Complaint related to dust emissions (poor air quality owing to the project) register kept on site.</li> </ul>
Waste generation and management	<p>There is a generation of both general, and human waste on site.</p> <p>Potential soil polluted by hydrocarbons that may be handled on site especially from accidental oil or fuel leaks from vehicles or equipment should be treated as hazardous waste.</p>	<ul style="list-style-type: none"> <li>-The waste should continue to be disposed of at approved and appropriate waste site.</li> <li>-Temporary waste disposal facilities should be present on site. This should include separate containers for products that can be re-used or recycled.</li> <li>-Recycling of solid waste should be encouraged to minimise the amount of waste at waste sites.</li> <li>-The Site Personnel and visitors should continue using the provided ablution facilities to ensure continued better sewage management.</li> </ul>	<ul style="list-style-type: none"> <li>-Proponent</li> <li>-Project Manager</li> <li>-Environmental Officer</li> </ul>	<ul style="list-style-type: none"> <li>-Regular visual inspection.</li> <li>-A register of waste produced, and disposal methods should be maintained.</li> <li>-Regular disposal of waste from site to approved disposal /management sites.</li> </ul>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p><b>-Solid waste removal from the Plant:</b> Waste falling and blown off the garbage trucks during transportation from Site should be avoided to secure the waste and improve on this, thus preventing further environmental pollution.</p> <p>-For solar panels that will be unfit for the project or damaged, the storage and disposal of these should be controlled and managed by ensuring that they end up at an approved waste site.</p>		
	<p>Management of old and damaged solar panels</p>	<p>-Full installation inspection should be conducted monthly, and results of inspection will be included in the Operational Maintenance Report. If any of them is found to be faulty and beyond repair, they should be removed, handled with care, and disposed at the approved nearest waste management facility, or any waste disposal or storage facility preferred by the Proponent.</p> <p>-Old solar panels should be stored separately on site, i.e., in their own secured space until such a time that they can be safely transported away to the approved waste management facility off site.</p> <p>-No written off/damaged or project unfit solar panels should be disposed of at any other waste facility other than the designated waste facility.</p>	<p>-Site Manager / Operator</p>	<p>-Solar panels are well-kept and maintained</p> <p>-Old and damaged panels are removed and disposed of at the waste facility (site) at the approved waste management facility such as in Arandis (upon reaching an agreement with the Arandis Town Council to disposed of old or damaged solar panels).</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
<p>Water resources (groundwater) and soil contamination</p>	<p>Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table either at the site of spill or after being washed away by surface flow during heavy rainy seasons (flash floods).</p> <p>Accidental spills of fuel, and other chemicals that may be used on site might occur.</p>	<p>-All precautions are to be taken to prevent contamination of the soil as this could enter the ecosystem.</p> <p>-Proper training of project personnel should be done to reduce the possibility of the impact occurring, especially with onsite soil contamination.</p> <p>-A qualified and reputable sewage removal contractor should be appointed to handle sewage during removal to make sure that it does not spill on the soils during transfers to contaminate it and eventually water sources/bodies (groundwater).</p> <p>-Any fuel spills must be reported, and remediation action taken.</p> <p>-Contaminated soil must be transported away from the site to an approved, appropriately classified waste disposal site. Contaminated soil should be remediated.</p>	<p>-Site Manager / Operator</p> <p>-Environmental Officer</p>	<p>-Report for all spills or leaks on site are completed by the Site Operator (as assisted by the Environmental Officer) and submitted to Project Manager for reporting</p> <p>-Potential soil pollutants/waste carried away to disposal sites</p>
<p>Archaeological and Cultural Heritage Impact</p>	<p>Sites with archaeologically or culturally important significance might be uncovered during excavations.</p>	<p>-Upon discovery of such sites or objects at some point on site or surroundings, it must be reported to the National Heritage Council of Namibia for further action/handling and permit issuance for possible conservation.</p>	<p>-Site Manager / Operator</p> <p>-Environmental Officer</p>	<p>-Record of any discoveries and proof of notifications to authorities (National Heritage Council) on file.</p>

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
	These can include graves, stone walls, or cultural artefacts.	-The destruction, damage or displacement of such sites is not allowed but should be reported to the National Heritage Council of Namibia.		
Visual Impact	This is an impact that affects the aesthetic appearance of the site	-The site should be kept neat and dispose of waste regularly. -The current colour of the solar panels and associated structures should be maintained and keep the same colour but not repainted to a colour that will further cause a significant contrast leading to visual nuisance (uncomfortable glare) to visitors or travellers.	-Site Manager / Operator	-A Visual complaints register kept on site and to be acted upon when the need arises.
Impact on biodiversity (fauna and flora) and ecosystem	Impacts on the ecosystem from the increase in the human footprint to the area may lead to land degradation, illegal collection of plant materials by project workers, and others.	-Operational activities should be limited within the site boundaries. Further land clearing should be avoided to prevent unnecessary habitat loss. -All employees should be educated about the value of biodiversity preservation. -Ensure continued biodiversity protection and conservations awareness refresher for current and future site workers (personnel). -Strict conditions prohibiting harvesting of fauna and poaching of fauna should be incorporated into employment contracts.	-Site Manager / Operator  -Environmental Officer	-A register including photos and date of observation of unusual animals onsite, dead animals and any bird strikes / electrocuted animals

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-Killing, injuring, hunting, capturing, disturbing, or feeding of any wild animal (reptiles or mammals) or remove any part of any wild animal, whether alive or dead is prohibited.</p> <p>-The removal, destroying, damage or disturb of any egg, nest, or burrow on and around the site is strictly prohibited.</p> <p>-The birds that may be found nesting in the roofs of the site Substations or structures should not be disturbed nor removed. The removal of nests should only be done unless they pose a health risk or interfere with the operations. This should be communicated with MEFT.</p> <p>-In cases of encounters with snakes crossing the site, these should not be killed nor harmed but allowed to move away. Alternatively, the MEFT should be notified for safe removal and releasing into the wildness.</p>		

Aspect	Activity	Management & Mitigations measures	Responsibility	Key Performance Indicator (KPI)
		<p>-It is prohibited to pick, collect, destroy, damage, tamper with, disturb or remove any vegetation mineral or any other object of botanical, zoological, geological, archaeological, and historical or any other scientific interest, or part thereof. Appropriate permits should be obtained if there would be intentions to carry out any or some of these forms of “disturbance” to biodiversity.</p> <p>-A register of plant species and dead animals or snakes found on site should be kept. Photos should be taken and recorded. The details should include date of encounter, animal / plant name and location (location reference/description or GPS coordinates).</p>		

### 5.3 Cumulative impacts

These are impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period. In relation to an activity, it means the impact of an activity that may not be significant, may become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertakings in the area.

All other preventive, including management and mitigation measures for the different impacts will be implemented accordingly to help prevent this impact.

## 5.4 Amended Environmental and Social Management Measures (If Any)

The aim of the management actions in this EMP is to avoid potential negative impacts where possible. Where impacts cannot be avoided, measures are provided to reduce the significance of these impacts.

The management action measures for the three phases; construction, operational & maintenance and decommissioning are clearly set out in the 2021. The EMP clearly assign implementation responsibilities, monitoring indicators as well as timeframes. This is done to ensure that the EMP implementation responsibilities are clearly given, and each implementation party involved in the project is aware of their respective responsibilities from the beginning and remain accountable.

Throughout the 1.5 years, there has been no need to add more management action (measures) because the current ones (as recommended in the original EMP) are deemed sufficient, provided that their continued full and effective implementation and monitoring.

The measures are set to enforce full compliance of the site activities to the governing legislations and ensure environmental sustainability by avoiding or minimizing the negative impacts while maximizing the project's positive impacts.

The recommendations and conclusions made for the overall report are as presented under the next chapter below.

## 6 ENVIRONMENTAL MONITORING, COMPLIANCE AND AUDITING

To ensure compliance with the legal requirements, minimize potential adverse impacts and improve environmental sustainability, continued monitoring is recommended onsite. These recommended monitoring exercises are to be implemented as follows:

### 6.1 Monitoring of EMP Implementation and ECC Renewal

- Environmental Monitoring (during construction of the shelter (storage) structure): A weekly monitoring of the EMP implementation (Environmental Monitoring) should be undertaken throughout construction and the findings included in a monthly report. These findings will then be incorporated into the next Environmental monitoring report to be compiled and submitted to the Department of Environmental Affairs and Forestry (DEAF) for archiving. This practice will make future ECC renewals easy. Therefore, the Proponent should effectively monitor the EMP implementation and submit the reports to the DEAF. The submission is not only done for record keeping purposes, but also in compliance with the environmental legislation.



- Environmental Monitoring (during the validity period of the ECC): Annual compliance monitoring of the EMP implementation (Environmental Monitoring) should be undertaken throughout the project cycle, i.e. as required in the ECC conditions (bi-annual or annually – pending the conditions in the amended ECC). Environmental monitoring reports are to be compiled and submitted to the Department of Environmental Affairs and Forestry (DEAF) for archiving. This practice will make future ECC renewals easy. Therefore, the Proponent should effectively monitor the EMP implementation and submit the reports to the DEAF. The submission is not only done for record keeping purposes, but also in compliance with the environmental legislation.
- Environmental Compliance Checklist: To make impact monitoring and EMP compliance easy, the Proponent should keep a Checklist that can be used by the Environmental Officer and updated accordingly. An example of the Site Environmental Monitoring is provided under Appendix C.

## 6.2 Environmental Awareness

Sertum Energy should ensure that its employees and any third party who carries out all or part of their obligations are adequately trained regarding the implementation of the EMP, as well as regarding environmental legal requirements and obligations. Training may be conducted by the Environmental (Control) Officer, where necessary.

Environment and health awareness training programmes should be targeted at three distinct levels of employment, i.e. the executive, middle management, and labour. Environmental awareness training programmes shall contain the following information:

- The names, positions, and responsibilities of personnel to be trained.
- The framework for appropriate training plans.
- The summarized content of each training course.
- A schedule for the presentation of the training courses.
- The ECO shall ensure that records of all training interventions are kept in accordance with record keeping and documentation control requirements as set out in this EMP. The training records shall verify each of the targeted personnel's training experience.

## 7 RECOMMENDATIONS AND CONCLUSIONS

Serja Consultants had carried out site visits and observations for the implementation of the current EMP onsite as part of environmental monitoring for the past 1.5 years. The project is of small to medium-scale level and activities are well limited within the site boundaries. The Proponent has been compliant with the

EMP requirements as recommended for the completed construction phase, and now in the operational phase. The components of the EMP (management measures) that were recommended for the construction activities have been fully implemented (in full compliance) and this has been observed with some biophysical and social environmental components on and around the site.

## 7.1 Recommendations

The Environmental Consultant is confident that the potential negative impacts associated with the current and additional project activities can be mitigated by effectively implementing the recommended management action measures and with more effort and commitment put on implementation monitoring. It is therefore, recommended that the Solar (PV) Plant project and associated activities on site be granted a new Environmental Clearance Certificate, and provided that:

- All the respective management (mitigation) measures provided in the 2020 EMP and this amended EMP are effectively implemented progressively per project phase and monitored as stipulated to achieve full EMP implementation compliance.
- All required permits, licenses and approvals for the project activities are obtained as required (please refer to the Permitting and Licensing).
- Where required and emphasized, improvements should be made with full commitment and effectively put in place.
- Sertum Energy, their project workers and contractors comply with the legal requirements governing their project and its associated activities.
- All the necessary environmental and social (occupational health and safety) precautions provided are adhered to.
- To ensure that the ECC is always valid and compliant with Environmental laws, Sertum Energy should continue to effectively conduct Environmental (EMP) Compliance Monitoring and most importantly, ensure timely submission of ECC renewal applications.

## 7.2 Conclusions

The Environmental Consultant acknowledges that Sertum Energy has been compliant with the ECC conditions and implementation of the EMP onsite between September 2021 to date, as well as undertaking of bi-annual environmental reporting. The Environmental Consultant recommends that the ECC be amended so that the Proponent can continue with the project activities (operational phase to generate electricity for the nation) and ensure timely renewal before September 2024.

There has not been any significant changes or activities that might compromise the environment or its components and or trigger significant changes in the management and mitigation measures initially provided.

Furthermore, based on the recent site observations, the site is generally well-kept, and the current works are well within the initial EMP requirements for the operations. The Environmental Consultant trusts that Sertum Energy will continue to maintain the same commitment towards environmental sustainability and ethics throughout the project cycle, and ensure timely renewal of ECC.

Therefore, it is crucial for the Proponent and their workers as well as contractors (where needed) to continue with the effective implementation of the recommended management measures to protect both the biophysical and social environment. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities and structures in the host environment.

The Proponent and contractors will also be required to comply with all legal obligations governing their project activities (throughout to future decommissioning phase, if considered).

## **APPENDIX A:**

**CURRENT ENVIRONMENTAL CLEARANCE  
CERTIFICATE (ECC)**



**REPUBLIC OF NAMIBIA**  
**MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM**

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

**ENVIRONMENTAL CLEARANCE CERTIFICATE**

**ISSUED**

In accordance with Section 37(2) of the Environmental  
Management Act (Act No. 7 of 2007)

**TO**

**Sertum Energy Namibia Pty Ltd**  
**P. O. Box 2125, Keetmanshoop**

**TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY**

**Operational and Maintenance of the 22.80 MWac Trekkopje Solar Park  
(Photovoltaic Plant), Erongo Region**

  
MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM  
Private Bag 13306  
WINDHOEK, NAMIBIA  
**13 SEP 2021**  
ENVIRONMENTAL COMMISSIONER  
REPUBLIC OF NAMIBIA

Issued on the date: **2021-09-09**

Expires on this date: **2024-09-09**

**(See conditions printed over leaf)**

Reduce  
Reuse  
Recycle



**CONDITIONS OF APPROVAL**

1. This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office
2. This certificate does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from these activities. Instead, full accountability rests with the proponent and its consultants
3. This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project
4. All applicable and required permits are obtained and mitigation measures stipulated in the EMP are applied particularly with respect to management of ecological impacts.
5. Strict compliance with national heritage guidelines and regulations is expected throughout the life-span of the proposed activity, therefore any new archaeological finds must be reported to the National Heritage Council for appropriate handling of such





REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

Tel: (00 264) 61 284 2111  
Fax: (00 264) 61 232 057

Cnr Robert Mugabe &  
Dr Kenneth Kaunda Street  
Private Bag 13306  
Windhoek  
Namibia

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

NOTIFICATION OF DECISION

REF NUMBER: ECC 01612

DATE OF ISSUE: 09 SEPTEMBER 2021

DETAILS OF PROPONENT:

Sertum Energy Namibia (Pty) Ltd  
P O Box 12012  
Windhoek  
Namibia

Dear Sir/ Madam

**SUBJECT: NOTIFICATION ON APPLICATION FOR ENVIRONMENTAL CLEARANCE TO UNDERTAKE THE PROPOSED LISTED ACTIVITY: OPERATIONAL AND MAINTENANCE OF THE 22.80 MWAC TREKKOPJE SOLAR PARK (PHOTOVOLTAIC PLANT) IN THE ERONGO REGION**

**Notice is herewith given** in accordance with section 37(2) of the Environmental Management Act, Act 7 of 2007 and Environmental Impact Assessment Regulations of 2012 (GG 4878): that a decision in respect to your application No. **APP 2666** for environmental clearance to undertake a listed activity has been reached.

**DECISION**

An Environmental Clearance Certificate (ECC) to undertake the listed activities specified in the environmental assessment report and draft management plan dated June 2021, is granted (**ECC 01612**). The applicant / proponent is therefore advised to comply with conditions of approval set out in **Section C** of this notification.

**A. DETAILS OF THE PROPOSED ACTIVITY**

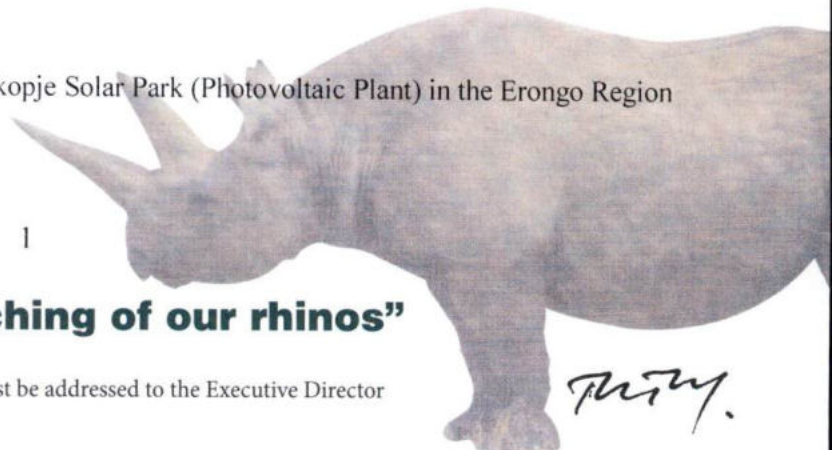
**A1: TITLE OF THE PROPOSED ACTIVITY**

Operational and Maintenance of the 22.80 MWac Trekkopje Solar Park (Photovoltaic Plant) in the Erongo Region

1

**“Stop the poaching of our rhinos”**

All official correspondence must be addressed to the Executive Director



## **A2: DETAILS OF ASSESSMENT PRACTITIONER**

Fredrika Shagama (Independent Water and Environmental Consultant),  
EAPAN registered Ordinary Member Practitioner  
P.O. Box 27318, Windhoek, Namibia  
Email: [fshagama@gmail.com](mailto:fshagama@gmail.com)  
Mobile: +264 81 407 5536

## **A3: LOCATION OF PROPOSED ACTIVITY**

The project site covering surface area of 70 hectares (ha) is situated within the Orano Mine premises, about 60 km north northeast of Swakopmund and 55 km east of Henties Bay in the Erongo Region (Figure 1, Figure 2 (A) and Figure 3 (B)) and about 11 km east of the Dorob National Park boundary (Annexure A – proposed site map)

## **B. RELEVANT LISTED ACTIVITIES**

<b>Legislation</b>	<b>Description of Listed Activity</b>	<b>Relevance to Proposed Activity</b>
Regulation 29(sub-regulation 5) of Government Notice No. 29 of 2012	INFRASTRUCTURE 10.1 The construction of- (a) oil, water, gas and petrochemical and other bulk supply pipelines; (b) public roads; (c) railways and harbours; (d) airports and airfields; (e) any structure below the high water mark of the sea; (f) cableways; (g) communication networks including towers, telecommunication and marine telecommunication lines and cables; (h) motor vehicle and motorcycle racing and test tracks; (i) the outdoor racing sites of motor powered vehicles including - (i) motorcars; (ii) trucks; (iii) motorcycles; (iv) quad bikes; (v) boats; and (vi) jet skis; (j) masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding - (i) flag poles; and (ii) lightning conductor poles. 10.2 The route determination of roads and design of associated physical infrastructure where - (a) it is a public road; (b) the road reserve is wider than 30 meters; or (c) the road caters for more than one lane of traffic in both directions.	Operational and Maintenance of the 22.80 MWac Trekkopje Solar Park (Photovoltaic Plant) in the Erongo Region





## C. CONDITIONS

### **C1: Conditions of Approval**

1. This certificate does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from these activities. Instead, full accountability rests with the proponent and its consultants.
2. This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project.
3. Regular environmental monitoring and evaluations on environmental performance should be conducted. Targets for improvements should be established and monitored throughout this process.

### **C2: Clearance Certificate Validity**

1. This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office.
2. On expiry of the ECC, the proponent is required to submit within a period not exceeding one month, and in the prescribed form and manner an application to the Office of the Environmental Commissioner for the renewal of the ECC.
3. Failure to renew an expired environmental clearance certificate shall result in permanent termination of the environmental clearance certificate.
4. In terms of Section 3 (2)C of the Environmental Impact Assessment, you are instructed to, within 14 days of this notice issuance date, ensure that all registered interested and affected parties ("I&APs") are notified that an environmental clearance certificate has been issued in respect to your application and of their right to appeal

### **C3: Compliance with authorization under other laws**

5. All other applicable and required permits or authorization from relevant competent authorities must be obtained prior to commencing the proposed activities and accordingly adhered to.


### **C4: Implementation and Monitoring**

6. The granting of the Environmental Clearance Certificate (ECC) constitute, an approval for the implementation of mitigation measures proposed in your approved Environmental Management Plan (EMP), hence making the approved EMP legally binding document.
7. The proponent shall appoint a suitably experienced environmental control officer, or site agent where appropriate, before the commencement of any listed activities to ensure compliance with the conditions of approval and mitigation stipulated in the approved EMP
8. A copy of the Environmental Clearance Certificate (ECC), EMP, Environmental Audit and monitoring reports must be kept at the site of the authorized activity and readily available for inspection by officials of the Ministry and registered Interested and affected Parties (I&APs) on request.





9. The proponent agrees to fully indemnify the Government of the Republic of Namibia in the event that the Government is held liable in respect of any loss, damage or injury sustained to an employee, contractor and/or visitor whilst such employee, contractor and/or visitor is in the auspices, direction or invitation of the holder.
10. Entry and exit points to the Park as well as the driving routes to be followed in the Park shall be determined by this Ministry in its sole discretion and shall be communicated to the Holder in writing. The proponent shall strictly adhere to the designated entry points, exit points and driving routes. Only existing tracks or roads may be used unless prior approval is obtained from the Ministry.
11. All tracks or roads must be established, constructed and rehabilitated under the supervision of officials designated by the Ministry for this purpose.
12. Should any heritage remains be exposed during excavations or any other actions on the site, these must immediately be reported to the National Heritage Council of Namibia. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from National Heritage Council.
13. Using the best and affordable methodology, the Proponent must ensure that all listed activity's operations footprints are thoroughly rehabilitated prior to closure of the operation. Wherever possible, the Proponent must proceed with the rehabilitation process concurrently with the progression of the project rather than wait until the damage is far beyond the available means of management.
14. The general standard for all rehabilitation processes must at all costs aim at restoring the natural character of the environment to the satisfaction of the Ministry of Environment and Tourism. Such rehabilitation processes shall be inspected and certified satisfactory or unsatisfactory by the Ministry of Environment and Tourism. Where a certificate of unsatisfactory is issued, the Proponent shall be advised to carry-out certain tasks to meet the requirements. Failure to meet the basic rehabilitation requirements shall be regarded by this Ministry as a breach of this contract and of which serious consequences shall follow.
15. Officials of the environmental commissioner's office may from time-to-time conduct spot-inspection (non-auditing) without prior notice and or Auditing Inspection (dates to be agreed prior to arrival to the site), hence access to the site and the aforementioned documentation must be granted to any authorized official representing the Office of the Environmental Commissioner and Registered Interested and Affected Parties (I&APs).
16. Any changes to, or deviations from the scope of the alternative described in section B above must be accepted or approved, in writing, by the Office of the Environmental Commissioner before such changes or deviations may be implemented. In assessing whether to grant such acceptance/ approval or not, the Competent Authority may request information in order to evaluate the significance and impacts of such changes or deviations, and it may be necessary for the holder to apply for further authorisation in terms of the applicable legislation.
17. Officials representing the Office of the Environmental Commissioner must be, in possession and or by request and for the purpose of inspection referred to in C4(15) present their staff identification card in order to gain entry to the premises.
18. The proponent is required, from the date of commencing implementation of project activities, to compile and submit environmental monitoring reports (on project progress and the environmental management profile) on a bi-annual basis to Office of Environmental Commissioner.




19. Any changes to, or deviations from the scope of project activities approved in respect to the assessment received and reviewed for the purpose of granting this ECC Number (**ECC 01612**) are subject to an amendment application and approval by the Environmental Commissioner prior to adopting / implementing any such changes / deviations.
20. For the purpose of amending and or transferring the ECC, the proponent submits in the prescribed form and manner an application to the Office of the Environmental Commissioner, clearly indicating the need for amendment and or transfer of the ECC.
21. Non-compliance with a condition of this Environmental Clearance Certificate or EMP may render the Proponent liable to criminal prosecution.

**D. DISCLAIMER**

1. The decision taken by the Office of Environmental Commission is based mainly on information provided to it by the proponent or their representative, therefore, it must be noted here that the proponent is accountable for any wrong and misleading information that may have been presented in the environmental assessment documents.
2. Furthermore, the environmental clearance certificate does not in any way hold the Ministry of Environment, Forestry and Tourism accountable for misleading information, nor any adverse effects that may arise from these activities. Instead, full accountability rests with Proponent
3. Consequently, the Office of Environmental Commissioner reserve the rights to annex (as necessary) further regulatory conditions during the operational phase of the activity / project

Your interest in the future of our environment is appreciated

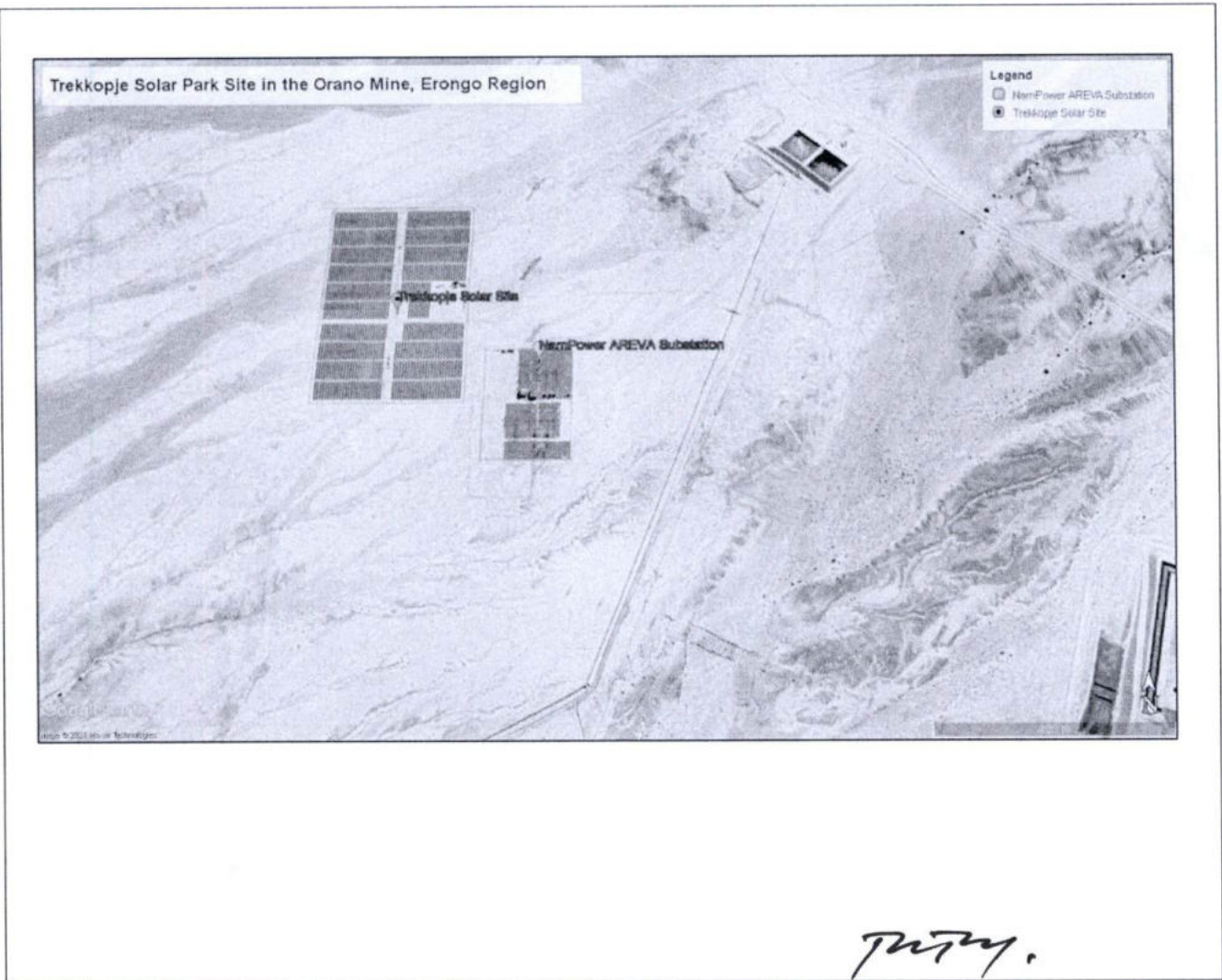
Yours sincerely,



Timoteus Mafeti  
**ENVIRONMENTAL COMMISSIONER**



ANNEXURE A: SITEMAP / SITE LAYOUT



## **APPENDIX B:**

**PROOFS OF BI-ANNUAL ENVIRONMENTAL  
MONITORING FOR THE TREKKOPJE PV SITE  
BETWEEN MARCH 2022 AND MARCH 2023**

Ms. Fredrika Shagama (Independent Water and Environmental Consultant), EAPAN registered Ordinary Member Practitioner

Postal Address: P.O. Box 27318, Windhoek, Namibia

Email: fshagama@gmail.com

Mobile: +264 81 407 5536

Date: 03 March 2022

The Environmental Commissioner  
The Department of Environmental Affairs and Forestry  
Ministry of Environment, Forestry and Tourism  
Private Bag 13306  
Windhoek, Namibia

Attention: Mr. T. Mufeti

Dear Sir

**RE: SUBMISSION OF THE BI-ANNUAL ENVIRONMENTAL AUDIT REPORT FOR THE OPERATIONAL AND MAINTENANCE ACTIVITIES FOR THE 22.80 MEGA-WATT ALTERNATING CURRENT (MWAC) TREKKOPJE SOLAR (PHOTOVOLTAIC) PARK IN THE ERONGO REGION (WITH THE INSTALLED POWER OF 5.76 MW) - ECC NO.: ECC001612**

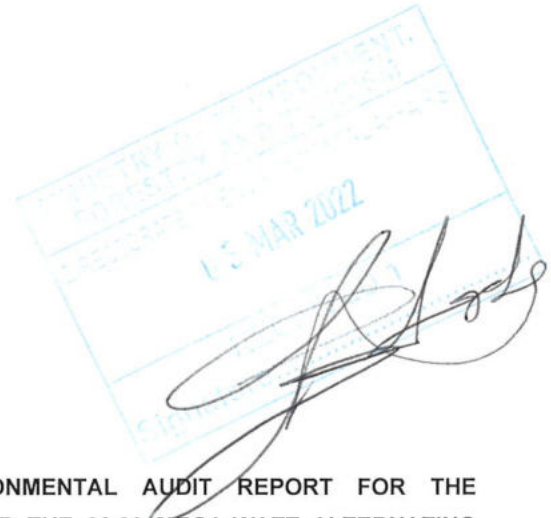
In fulfilment of the Condition No.14 (C14) of the Environmental Clearance Certificate (ECC) No. 1612, Ms. Fredrika Shagama, an Independent Environmental Assessment Practitioner (EAP) / Environmental and Water Consultant hereby submits the Report hard copy accompanying this letter. The Report is for the March 2022 Cycle's **Bi-Annual Environmental Audit: Operational and Maintenance Activities for the 22.80 Mega-Watt Alternating Current (Mwac) Trekkopje Solar (Photovoltaic) Park with the installed power of 5.76 MW in the Erongo Region (within the Orano Mine Premises) in the Erongo Region** for Sertum Energy Namibia Pty Ltd (The Project Proponent/Owner).

A soft copy of the Report will also be uploaded on the ECC Portal.

Yours Sincerely,



.....  
Ms. Fredrika N. Shagama (Independent Water and Environmental Consultant)



Ms. Fredrika Shagama (Independent Water and Environmental Consultant), EAPAN registered Ordinary Member Practitioner

Postal Address: P.O. Box 27318, Windhoek, Namibia

Email: fshagama@gmail.com

Mobile: +264 81 407 5536

Date: 07 September 2022

The Environmental Commissioner  
The Department of Environmental Affairs and Forestry  
Ministry of Environment, Forestry and Tourism  
Private Bag 13306  
Windhoek, Namibia



Attention: Mr. T. Mufeti

Dear Sir

**RE: SUBMISSION OF THE BI-ANNUAL ENVIRONMENTAL REPORTING FOR THE OPERATIONAL AND MAINTENANCE ACTIVITIES FOR THE 22.80 MEGA-WATT ALTERNATING CURRENT (MWAC) TREKKOPJE SOLAR (PHOTOVOLTAIC) PARK WITH THE INSTALLED POWER OF 5.76 MW IN THE ERONGO REGION - ECC NO.: ECC001612**

In fulfilment of the conditions of the Environmental Clearance Certificate (ECC) No. 1076, Ms. Fredrika Shagama, an Independent Environmental and Water Consultant hereby submits an Environmental Audit (Bi-Annual) Report hard copy accompanying this letter. The Report has been prepared for the Cycle of September 2022's **Bi-Annual Environmental Audit: The Operational and Maintenance Activities for the 22.80 Mega-Watt Alternating Current (Mwac) Trekkopje Solar (Photovoltaic) Park with the Installed Power of 5.76 MW in the Erongo Region** (ECC No. 1612) for Sertum Energy Namibia Pty Ltd (The Project Proponent / Operator).

Yours Sincerely,

Ms. Fredrika N. Shagama (Independent Water and Environmental Consultant)

Date: 06 March 2023

The Environmental Commissioner  
The Department of Environmental Affairs and Forestry  
Ministry of Environment, Forestry and Tourism  
Private Bag 13306  
Windhoek, Namibia



Attention: Mr. T. Mufeti

Dear Sir

**Re: Submission of the Bi-Annual Environmental Reporting for the Operational and Maintenance Activities for the 22.80 Mega-Watt Alternating Current (Mwac) Trekkopje Solar (Photovoltaic) Park with the Installed Power of 5.76 MW in the Erongo Region - ECC No. 001612**

In fulfilment of the conditions of the Environmental Clearance Certificate (ECC) No. 001612, Ms. Fredrika Shagama hereby submits an Environmental Audit (Bi-Annual) Report hard copy. The Report has been prepared for the Cycle of March 2023's Bi-Annual Environmental Audit: The Operational and Maintenance Activities for the 22.80 Mega-Watt Alternating Current (Mwac) Trekkopje Solar (Photovoltaic) Park with the Installed Power of 5.76 MW in the Erongo Region (ECC No. 001612) for Sertum Energy Namibia (Pty) Ltd (The Project Proponent / Operator).

Should you or your office require further information, please do not hesitate to contact us.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Fredrika Shagama', written over a dotted line.

Ms. Fredrika Shagama: Environmental Assessment Practitioner & Hydrogeologist

Mobile No.: +264 (0) 81 407 5536

Email: [fshagama@gmail.com](mailto:fshagama@gmail.com) / [fredrika@seriaconsultants.com](mailto:fredrika@seriaconsultants.com)



# **APPENDIX C:**

## **SITE ENVIRONMENTAL MONITORING TABLE**

## Key Aspects for monitoring and actions thereto: Operations and Maintenance Phase – Sertum Energy PV Site

No.	Objective	Requirement	Frequency	Evidence
1.	Sustainable utilisation of water resources	-Water should be utilised efficiently	Monthly	-Provide the total water usage records (monthly) for the period being monitored
2.	Avoid environmental pollution	-The site waste bins should be emptied once capacity is reached	Monthly	-Records of waste removal from site
3.	To protect and conserve biodiversity: Avifauna	-Inspection of the site for dead or injured birds and bats  -Inspect the powerline route from site to the substation for birds collision owing to the powerline	Weekly	-Records of the findings
	To protect and conserve biodiversity: Reptiles (snakes)	-Inform MEFT officials and if not arriving on time, the snakes should be left to move away without being harmed.	Weekly	Records of the findings and action (photos and date of encounter as well as coordinates, if possible)
4.	Prevent the risk of Accidental fire outbreaks	-Inspect the site for any flammable substances such as dry woods, open fires  -Keep the site area and fence area clear off grass, thus, limiting the risk of accidental fire spreading.	Weekly	-No flammable substances such as dry vegetation, littered plastics and papers or open fires are present nor allowed onsite
5.	Avoid negative conflict and ensuring grievances raised are resolved amicably	-Address any concerns raised by the stakeholders or neighbouring occupiers of land adjacent to the site.	Ad-hoc	-Records of grievances or complaints regarding site operations or related activities.

No.	Objective	Requirement	Frequency	Evidence
6.	To ensure health and safety onsite	<p>-The site workers and visitors are properly equipped with PPE</p> <p>-The first aid kit is fully furnished</p> <p>-The fire extinguishers are always serviced and up-to-date</p>	<p>Ad-hoc and as deemed necessary</p> <p>Monthly</p> <p>Servicing done as prescribed by equipment provider/manufacturer</p>	<p>Records of PPE purchased and delivered to site</p> <p>Records of first aid refurbishment with dates</p> <p>Records of fire extinguisher services</p>