

ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) **RENEWAL REPORT FOR THE:**

CONSTRUCTION AND OPERATIONAL ACTIVITIES OF A 5-MEGAWATT (MW) SOLAR (PHOTOVOLTAIC) POWER PLANT SITUATED IN OKATOPE, OSHIKOTO REGION

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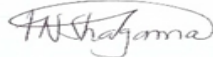


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DOCUMENT INFORMATION

Title: Environmental Clearance Certificate (ECC) Renewal Report for the construction and operational activities of a 5-megawatt (MW) Solar (Photovoltaic) Power Plant situated in Okatope, Oshikoto Region

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EXECUTIVE SUMMARY

Unisun Energy (Pty) Ltd (hereinafter referred to as *Unisun Energy* or the *Proponent*) proposed to construct and operate a 5-Megawatt (MW) solar Photovoltaic (PV) Plant in the Onandjamaba Village, Okatope in the Oshikoto Region. The Solar (PV) Plant site is located about 40 km southeast of Ondangwa and 44 km northwest of Omuthiya. The site well located within 2 km north of the existing NamPower Substation, along the B1 road (about 1 km from the road to site). The project site covers a surface area of 17 hectares (ha) or 170 000 m². The land on which the PV Plant activities are conducted is communal, and therefore falls under the Ondonga Traditional Authority. A Land Use Consent, in a form of a leasehold was issued and granted to Unisun Energy by the Traditional Authority in January 2015. The lease agreement was attached to the project EIA Report and re-attached to this document as Appendix A.

Electricity generation and supply is one of the listed activities that that may not be undertaken without an Environmental Clearance Certificate (ECC). Subsequently, prior to the current construction activities Unisun had an Environmental Impact Assessment (EIA) done for their project by GeoPollution Technologies in 2015, and an ECC was also issued the same year (11 November 2015). This ECC has expired in November 2018, since the validity of ECCs in Namibia is only three years and should be renewed. The lack of sufficient understanding of the ECC issuance and its validity by the Proponent may have caused its overdue renewal until only two years later (Unisun Energy realized very late that their ECC has long expired). To ensure that their project activities remain compliant with the national environmental legislation that also include being in possession of a valid environmental clearance as a project Proponent, they approached Ms. Fredrika Shagama, an independent Environmental Assessment Practitioner (Environmental Consultants) to assist them with the application for their ECC Renewal.

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 Mines and Energy (MME) as the Competent Authority for the project (submitted on 4 August 2020 to the Office of the MME's Executive Director). The date stamped copy of the ECC renewal application Form also been uploaded on the EIA online system (Portal) of the Ministry of Environment, Forestry and Tourism (MEFT) and upon submission of an updated draft Environmental Management Plan (EMP) / Renewal Report, a new ECC for the project will be considered.

The Potential Adverse Impacts identified in 2015 and as Re-Checked in 2020

The potential (key) negative impacts that were identified, assessed and for which the current management measures were recommended in 2015 (during the preceding environmental assessment done for the project, leading to the issuance of the first and expired ECC in November 2015) are as follows.

Construction (the current phase for which the potential impacts are assumed to be occurring and EMP is currently implemented):

- Impact on biodiversity and ecosystem.

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- Archaeological (heritage).
- Impact on utilities and existing infrastructure.
- Risks of fire.
- Dust (air pollution).
- Soil and water resources contamination.
- Vehicular Traffic.
- Noise.
- Waste generation.
- Visual impact.
- HIV/AIDS, immigration, informal settlements, and property prices; and
- Health, safety, and security.

Operational phase (anticipated impacts after the commencement of this phase)

- Ecosystem impact.
- Birds (avifauna) impact.
 - PV Plant impact on birds
 - Collision of birds with the project associated powerline
 - Electrocuting of birds on the powerline
 - Bird nesting activity on power line structures and panels
- Noise.
- Risks of fire; and
- Traffic (vehicular) safety.

The management measures were made for these impacts in 2015 and updated as deemed necessary in August 2020 (when the ECC renewal site visit and observations were conducted and made, respectively).

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The implementation of the EMP and compliance during the validity period of the expired environmental clearance certificate (ECC) and after the ECC's expiry is provided in this document. The evaluated and updated EMP compliance status has been carried out based on the 2015 project EMP compiled by GeoPollution Technologies. The project site status presents that despite the ECC expiring in November 2018, progress has been made on the EMP implementation between 30 November 2015 and 5 August 2020. This would be aimed at improving and ensuring environmental management and sustainability, respectively.

The next EMP Compliance check (EMP implementation monitoring) should be done in August 2021, which will see progress reporting on the current and activities that will be carried on site between August 2020 and August 2021. The monitoring exercise can be undertaken either by the project Environmental Control / Health, Safety and Environment Officer or an independently appointed Environmental Assessment Practitioner (Environmental Consultant). An Environmental Audit/Compliance Report shall be compiled for every monitoring and submitted to the DEAF at the Ministry of Environment, Forestry and Tourism for archiving. This would make the next ECC Renewal 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 carried out a site visit and observation with the aim of assessing the implementation of the EMP on the project site for the purpose of the project's ECC renewal. The project is of small to medium-scale level and activities are well limited within the site boundaries only. According to the observations on site on 5 August 2020, it was found that although not all potential (negative) impacts that were anticipated during the EIA study in 2015 have come to pass, the Proponent has been fully compliant with most of the EMP requirements as recommended for the construction phase which they have been busy with at the time of the site visit. 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. The required permits such as the access road has been applied for to the Roads Authority and approved, i.e. the road access permit has been issued. The road has been upgraded to standard in preparation for the operational phase, although it has been currently used for construction activities' related vehicles already.

Another partial compliance recorded is also on monitoring because there is no record of EMP compliance monitoring (audit) done for the site since the issuance of the expired ECC. However, this can be greatly improved on the way forward, with the assistance of the Environmental Consultant or project Safety, Health and Environmental Officer (SHE / Environmental Control Officer) and the Proponent's full commitment and co-operation.

Recommendations

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Therefore, the Environmental Consultant is confident that the potential negative impacts associated with the project activities on site can continue to 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, provided that:

- All management measures (mitigations) provided in the initial EMP continue to be implemented effectively with compliance emphasis pointed out in this ECC Renewal Report, specifically Chapter B, section 6.3 (**Table 3**) and **where required, improvement should be effectively put in place.**
- All required permits, licenses and approvals for the project activities are obtained as required (please refer to the Permitting and Licensing in **Table 2** of this document).
- All the respective management (mitigation) measures provided in the initial project EMP drafted in 2015 (also as presented for the current project (phase) activities under Table 3 of this document) are effectively implemented progressively per project phase and monitored as stipulated to achieve full EMP implementation compliance.
- Where required and emphasized, improvements should be made with full commitment and effectively put in place (again please refer to **Table 3** of this document).
- The Proponent and all their project workers or 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 avoid very late renewal of the ECC, the Proponent' Safety, Health and Environmental Officer (or an ECO) should effectively conduct Environmental (EMP) Compliance Monitoring and most importantly, ensure timely renewal of the ECC. A Renewal application can be submitted at least 4 months before the expiry date of the valid ECC to allow time for the evaluation of the ECC Renewal report by the DEAF; and**
- **The next EMP Compliance check (EMP implementation monitoring)** should be done in August 2021, which will see progress reporting on the current and activities that will be carried on site between August 2020 and August 2021. The monitoring exercise can be undertaken either by the project Environmental Control / Health, Safety and Environment Officer or an independently appointed Environmental Assessment Practitioner (Environmental Consultant). An Environmental Audit/Compliance Report shall be compiled for every monitoring and submitted to the DEAF at the Ministry of Environment, Forestry and Tourism for archiving. This would make the next ECC Renewal easy because of an in-between track record of monitoring progress prior to the expiry date of the valid ECC.

Conclusions

The Environmental Consultant acknowledges that the ECC has been expired for almost 2 years without being renewed and this should have been done then (before 11 November 2018). This was probably due a lack of understanding on the first ECC's validity by the Proponent which they have also admitted to and committed to make sure that it will not happen again. The Environmental Consultant recommends that the expired ECC be renewed so that the Proponent can continue with the project activities (construction) to enable the commencement of the operational phase and ensure timely renewal before the end of the next 3 years counting from the new ECC date. Compared to the old ECC format, there will be an improvement to ECC renewals because the new ECC format also clearly shows the ECC validity period, and this will greatly assist the Proponent in keeping track of the end date and ensure timely renewal.

Furthermore, based on site observations (conducted on 5 August 2020), the site is generally well-kept, and the current works are well within the initial EMP requirements for the construction phase, which is currently underway. The solar panels will then be installed, and operational works will start soon after. The Environmental Consultant is of the same hope that the Proponent (Unisun Energy) will continue to maintain the same commitment towards environmental sustainability and ethics for their operational phase, once the ECC has been renewed and ensure its renewal on time, once again.

Therefore, it is crucial for the Proponent and their contractors 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 (from ongoing construction throughout to future decommissioning phase).

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APPENDIX B: Expired Environmental Clearance Certificate (ECC)

APPENDIX C: Layout/Drawing of the Project site/PV Plant

LIST OF ABBREVIATIONS

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

1 INTRODUCTION

1.1 Background and Project Location

Solar (Photovoltaic (PV)) is becoming one of the most important renewable sources of energy in the world, such that most government promotes their development and uses. This is recommended to reduce the reliance on the currently utilized non-renewable sources and use more of clean and green energy that in the long run have less to no adverse impacts on the environment. The Government of the Republic of Namibia has put in place several policies such as the Namibia Vision 2030, National Development Plans (NDPs), and the new Harambee Prosperity Plan that collectively aim to steer the country towards prosperity for the entire Namibian population.

The Namibia Vision 2030 is one of the country's new development blueprint covering the period 2004 to 2030 which aims to drive Namibia towards economic, industrial, and social flourish by combining a synergy of policies that will ensure prosperity for all.

Among the NDPs, the Fifth National Development Plan (NDP 5) extending from 2017/2018 to 2021/2022 intends to involve up-scaling and modernizing all sectors that contribute to economic development of the country. This will require that each expanding town be well catered for in terms of coordinating better energy sources thereby necessitating this 5MW Solar Photovoltaic (PV) Plant, which is a renewable source of power generation with zero carbon emissions.

The Harambee Prosperity Plan aims to usher the country into a period of economic prosperity, fully supporting initiatives such as the development of renewable energy sources under the Pillars of Energy Infrastructure development. These development policies combined aim to transform Namibia into an industrialized country with a high quality of life for all citizens and take our country to a developed nation status by 2030.

To contribute to the country's developmental policies and promote the use of solar energy in Namibia, Unisun Energy (Pty) Ltd (The Proponent hereafter) proposed to construct and operate a 5 Megawatt (MW) solar Photovoltaic (PV) Plant in the Onandjamaba Village, Okatope in the Oshikoto Region. The Solar (PV) Plant site is located about 40 km southeast of Ondangwa and 44 km northwest of Omuthiya (**Figure 1**). The site well located within 2 km north of the existing NamPower Substation as seen on a close view map in **Figure 2**, along the B1 road (about 1 km from the road to site). The site coordinates are given in **Table 1**. The project site covers a surface area of 17 hectares (ha) or 170 000 m². The land on which the PV Plant activities are conducted is communal, and therefore falls under the Ondonga Traditional Authority. A Land Use Consent, in a form of a leasehold was issued and granted to Unisun Energy by the Traditional Authority in January 2015. The lease agreement was attached to the project EIA Report and re-attached to this document as **Appendix A**.

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It should be noted that there are already two existing PV site in the area that are within 300 m from the NamPower Substation. These two sites do not belong to Unisun Energy but a different Proponent, therefore these two do not form part of this ECC Renewal. However, under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations, the proposed development 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:

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

An EIA study for the project was conducted and Environmental Management Plan (EMP) compiled by GeoPollution Technologies in 2015 in an application of the initial project ECC. The ECC was applied for and obtained in November 2015 from the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT) and Environmental Management Plan (EMP). However, this ECC has since expired (Appendix B) and never been renewed.

Table 1: GPS coordinates of the Plant Site and NamPower Substation

Site Feature	GPS Coordinates
Unisun Energy PV Plant (Point A)	-18.093553° 16.279636°
Unisun Energy PV Plant (Point B)	-18.091386° 16.279697°
Unisun Energy PV Plant (Point C)	-18.090772° 16.282192°
Unisun Energy PV Plant (Point D)	-18.096317° 16.283667°
Unisun Energy PV Plant (Point E)	-18.096861° 16.282292°
NamPower Substation	-18.108583° 16.289897°

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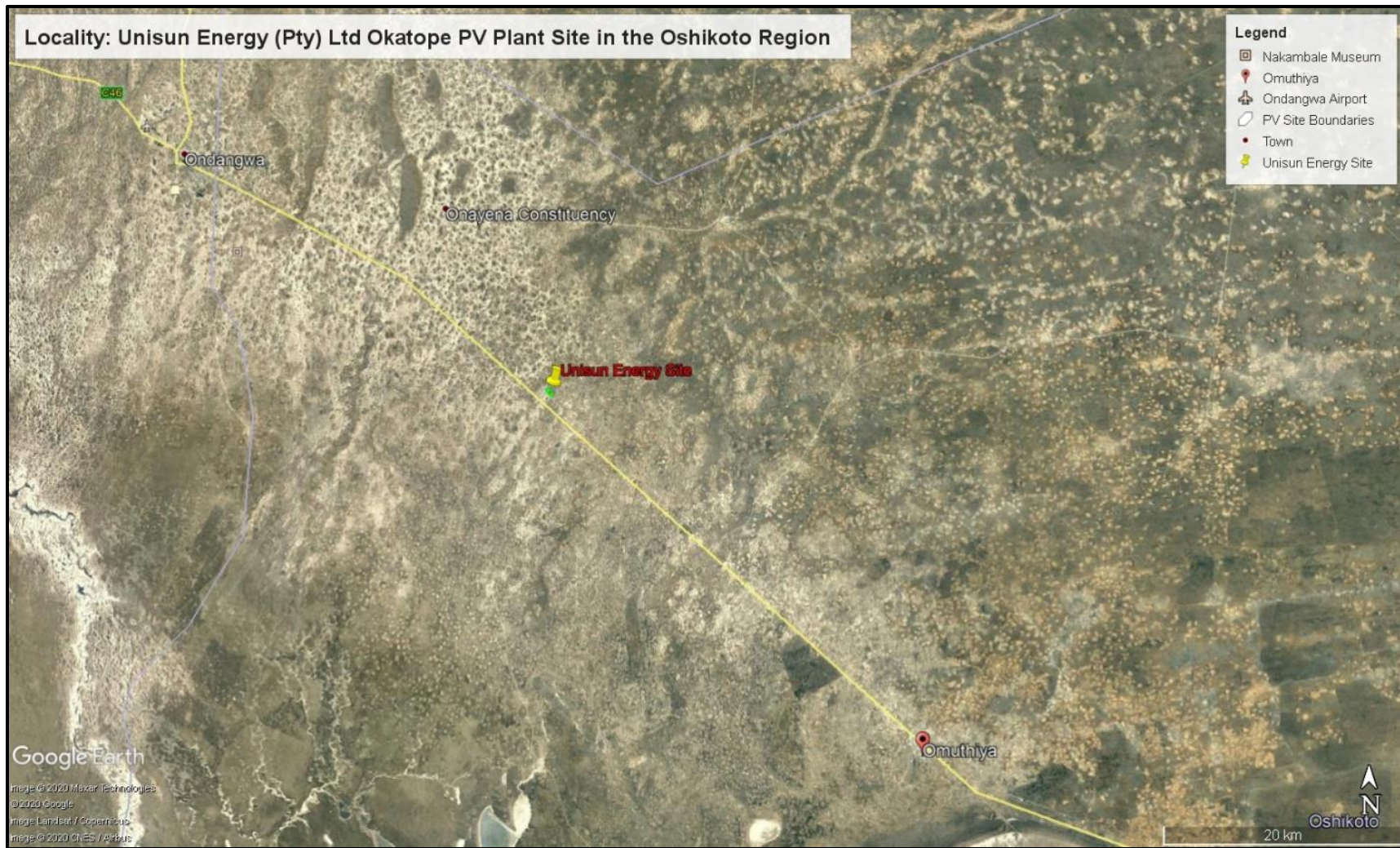


Figure 1: Location of the Okatope Solar (PV) Project between Ondangwa and Omuthiya in the Oshikoto Region

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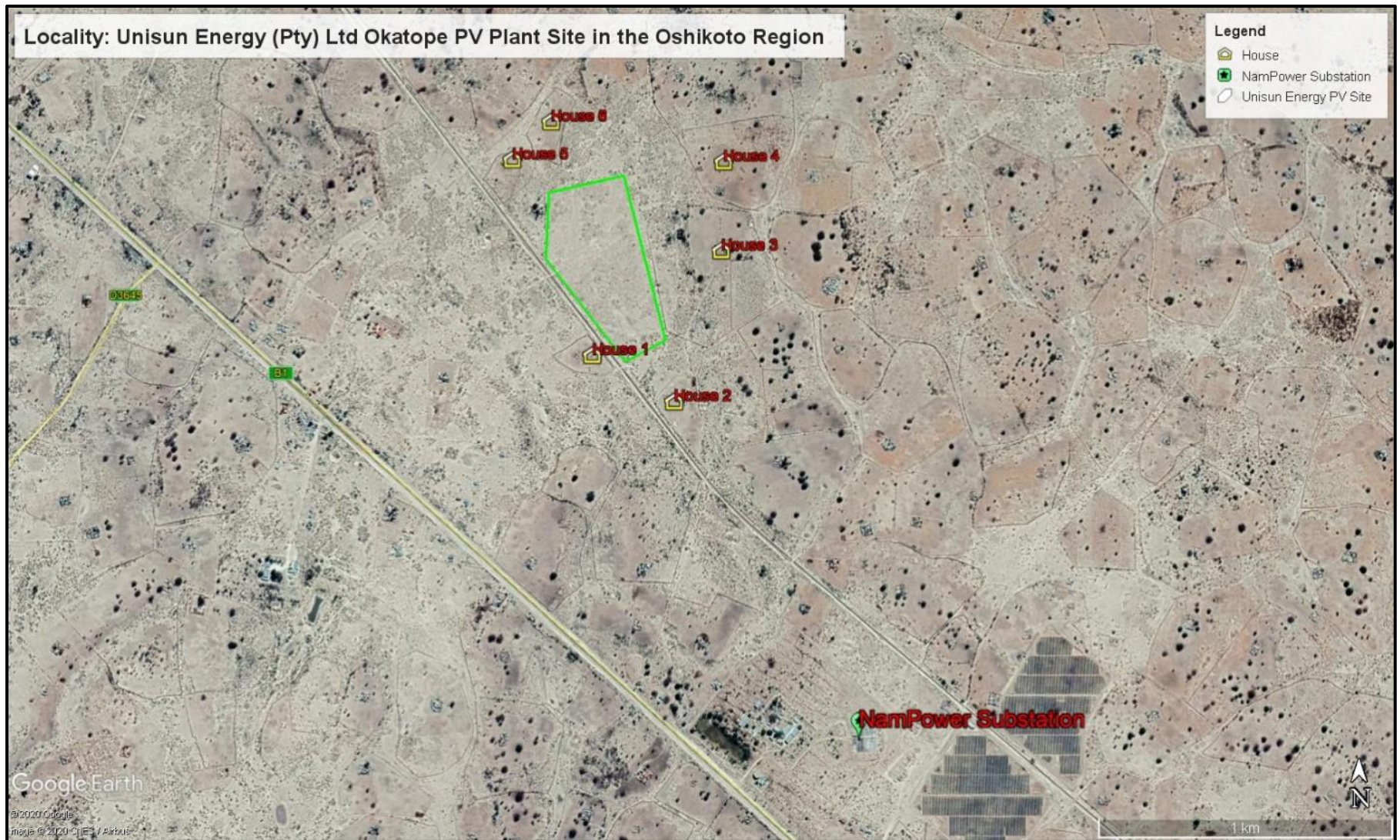


Figure 2: Close-up view of the Project Site and NamPower Substation in Okatope

1.2 Aim of the Document

This Report is aimed at updating the Ministry of Environment, Forestry and Tourism (MEFT) on the status of the project to enable the renewal of the expired environmental clearance certificate that was issued in November 2015. The aim is also to report on the progress of actual work done on site, implementation of the Environmental Management Plan and new changes that may have arisen between the date of the ECC issuance to date.

For the project to remain compliant to the environmental legislation and ensure sustainability, a new ECC should be applied for by submitting it to the Ministry of Mines and Energy (MME) as the project competent authority. The ECC Renewal Report (updated Environmental Management Plan (EMP)) is submitted to the Department of Environmental Affairs and Forestry (DEAF) at the Ministry of Environment, Forestry and Tourism (MEFT) for evaluation and consideration of the new ECC (renewal).

The purpose of renewing an ECC is to ensure that the ongoing project activities are undertaken in an environmentally friendly and sustainably manner. This is done by the effective implementations of environmental management measures recommended in the preceding EMP documents to minimize the adverse identified impacts while maximizing the positive impacts. Not only by the mere implementation of these measures, but also monitoring of this implementation through audit and compliance exercises on site throughout the project life cycle and validity of the ECCs over time.

Subsequently, to comply with the EMA and its 2012 EIA Regulations, Unisun Energy contracted Ms. Fredrika Shagama, an independent Environmental Consultant to undertake the necessary tasks for their ECC renewal. The required tasks include conducting a site visit (to assess the status of the old EMP's implementation on site), compiling an updated Environmental Management Plan (EMP) Report and submitting the ECC renewal application and Report to the competent and regulatory authority, respectively.

The description of the updated proposed (in the main EIA Report) and current site activities is presented under the next chapter.

2 DESCRIPTION OF CURRENT PROJECT ACTIVITIES (UPDATED)

The description of the project activities undertaken by Unisun Energy, particularly the ongoing construction works of the PV Plant to prepare for operations is presented under the following subsections of this chapter. The description of the project activities chapter focuses on the current works on site and if necessary, revisit the initial project activities proposed for both the construction and operational activities, project requirements in terms of inputs and resources, processes and outputs.

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It is important to take note that the project is still in its construction phase, therefore no operational activities have commenced. The description and subsequent (updated) environmental management measures will only be on both project phases covered in the GeoPollution Technologies 2015 EIA Report.

2.1 Construction Activities

Construction is underway at site in preparation of the operational phase. These works entail the following and as presented in the initial EIA Report (GeoPollution Technologies, 2015) and updated:

- Land clearing and earth works.
- Site fence erection and the construction of onsite construction camps.
- Development and upgrade of roads to and from site (access road upgrading)
- Associated building structures (including ablution facilities with associated septic tanks, site office, storage, and electrical control rooms etc.).
- Installation of services infrastructure such as water supply pipeline, and power supply.
- Construction of aluminium support structures for photovoltaic modules.
- Construction of the inverter/transformer foundation.
- Laying of cables.
- Laying of concrete foundations and supporting structures for solar panels' installation.

The site/PV Plant layout is attached as **Appendix C** of this report.

2.1.1 Services Infrastructure

- A. Water:** The water required for the construction works is primarily for suppressing construction dust and concrete works. This water is sourced from the surrounding natural dams (rainwater).

Drinking water for workers is sourced from the nearby homes at a fee, but some workers bring their own water from home.

- B. Site accessibility (Road):** A turn off (junction) from the B1 main road provides access to the PV Site during the current phase and the same road will provide access for the operational phase. The B1 road then connects the site to Omuthiya and Ondangwa, as the nearby major towns, and then to the rest of the country via different (gravel and tarred) roads. **An access road (Figure 3) will be upgraded for project operations. The application for road access has been submitted to the Roads Authority on 10 July 2020 and has been approved.**

There are visible road and safety signs around the project site.



Figure 3: The access road (junction) from the B1 road to site

C. Power Supply: The source of power supply to construction works are generators.

D. Fuel: There is no fuel tank on site. However, a bowser is brought to site to fill up vehicles and machinery. The nozzle works as that at filling station and no spillages.

2.1.2 Human Resources and Accommodation

Workers and accommodation: The construction phase currently employs forty-four (44) people onsite. One employee is from the Unisun Energy (site manager), twelve (12) from the main construction contractor (Abner Civil Contractor), thirty-one (31) subcontractors (10 hired artisans, 7 casual workers, 8 drivers and 6 security guards). All semi-skilled and unskilled workers (labourers) are hired from village or within 10 km with assistance of headman. The skilled workers are weighed on assessment and where local skills are lacking, outsiders are hired, for instance from Ondangwa.

A photo of some construction workers found on site during the visit is shown below (**Figure 4**).



Figure 4: Some of the construction workers on site

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The skilled and specialist contractor's team members and other project workers that are necessary for the works and do not live in the nearby areas are also housed in camps on site. These workers are housed in onsite camps for the duration of the construction works. Workers that are from the nearby villages commute from their homes.

2.1.3 Waste Management

- A. **Construction waste:** The waste generated at the site is minimal. This waste is sorted and temporary stored in different waste bins (drums) at the campsite and transported to Ondangwa Town's waste management site once the site drums reach capacity.

Note: from observations, the site is clean (good housekeeping). No littering nor oil spills nor leaks on the soil. All litter are bagged and kept in the car (Figure 5) awaiting to be transported to the approved waste site in Ondangwa.



Figure 5: Bags of general waste generated loaded on the car to be taken to Ondangwa waste site

- B. **Sanitation:** The site is equipped with toilets (pit latrines) for site workers and visitors.

2.1.4 Health, Safety and Security

- A. **Health and safety:** All project workers are well equipped with personal protective equipment (PPE) while performing tasks on site. They are also well in compliance with the Coronavirus Regulations (wearing of masks).

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First aid kits: There are two first aid kits on site, one is at the working sites and the second one is at the campsite.

B. Fire management: There are fire extinguishers on site and project vehicles are also equipped with fire extinguishers.

C. Site fencing: The site area is demarcated but not yet fenced off (visible black pegs seen on site – **Figure 6**). The site will be fenced off prior to the solar panels' installations. This will serve both as protection of the panels from potential intruders, vandalism and or theft as well as to restrict access to the site, i.e. to allow access to authorized personnel. The fence will also protect the vulnerable community members such as unsuspecting children from playing with project equipment including solar panels and end injure themselves.



Figure 6: Site fencing demarcating poles

2.2 Operational Activities

It is during this phase that the Solar (PV) Plant and its associated infrastructure will be operational whereby electricity will be generated and supplied to the nearby NamPower substation. Maintenance and repair of the Plant infrastructures, including the PV cells will be conducted by the Proponent's maintenance team or contractor.

According to GeoPollution Technologies (2015), the operations will include:

- Preventative and corrective maintenance of panels; and
- Intermittent cleaning of panels.

2.2.1 Services Infrastructure

A. Water: for operational activities, Unisun Energy has applied for a water connection from NamWater. This connection has been approved for long-term use and will be installed for operational phase.

The actual operational activities will not require nor use a significant amount of water. An insignificant amount of water is used for intermittent cleaning of the solar panels (once or twice a year) and human consumption (drinking and ablution facilities).

B. Site accessibility (Road): A turn off (junction) from the B1 main road provides access to the PV Site during the current phase and the same road will provide access for the operational phase. The B1 road then connects the site to Omuthiya and Ondangwa, as the nearby major towns, and then to the rest of the country via different (gravel and tarred) roads. **The upgraded and approved access road will be used for project operations.**

There are visible road and safety signs around the project site.

C. Power Supply: the site will be connected to the nearby NamPower grid (Okatope substation) which will provide the required power supply. Generators will also be available on site to serve as backup power source.

2.2.2 Human Resources and Accommodation

Workers and accommodation: The construction phase currently employs forty-four (44) people onsite. As per the initial EIA report, operations would employ twelve people (12). However, based on the new information from the site visit, Unisun Energy will revise the number and the need of human resources for the operational phase so that they could keep more than 12 people for the operational and maintenance phase.

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Project workers that are from the nearby villages will commute from their homes. therefore, no need for their accommodation on site. Onsite accommodation or in the nearby towns (depending on the duration of their services on site) would be considered for specialized/highly skilled workers who may need to spend some nights on site to keep the operations up and running uninterruptedly.

2.2.3 Waste Management

C. Operations waste: The solar panel operations do not produce a significant amount of waste. However, waste from panel maintenance and general related activities is sorted in different waste bins for each waste type on site. The waste is transported to Ondangwa Town's waste management site once the site bins reach capacity. No effluent or wastewater is anticipated from this phase.

D. Sanitation: Ablutions and flushing toilets will be installed after water pipelines are installed.

2.2.4 Health, Safety and Security

D. Health and safety: All project workers will be well equipped with adequate personal protective equipment (PPE) while performing tasks on site. They will also be trained on responsible occupational health, safety, and environmental requirements.

First aid kits: A minimum of two aid kits will be readily available at the working sites.

E. Fire management: Firefighting equipment (minimum of 2 extinguishers) will be made available on site and serviced as per manufacturer's instructions.

F. Dust Management: The dust emanating from problematic current site activities is suppressed by sprinkling these surfaces with a reasonable amount of water, when and as required (as shown in **Figure 7**).



Figure 7: Dust suppressing water truck

The following chapter presents the national and international legal requirements that are applicable and relevant to this assessment and water resources

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 will involve the generation, supply, and transmission of electricity. If required, Unisun Energy will need to apply for the relevant license (for electricity transmission) prior to commencing with the operational activities.

3.3 Namibia's Green Plan, 1992

In 1992, Namibia's Green Plan was drafted by the Ministry of Environment, Forestry and Tourism. The document analysed the main environmental challenges facing Namibia and specified actions required to address them. This included a strategic plan for integrated and sustainable environmental management, which outlines key focus areas for sustainable development.

Other relevant legislation that were consulted and applicable to the proposed development are presented in **Table 2**.

Apart from the presented Namibian legislation in **Table 2** 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.
- The IFC Performance Standards; and
- Good International Industry Practice (GIIP).

For the purpose of this Report, **Table 2** 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.**

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Table 2: 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 EAs.	The EMA and its regulations should inform and guide this EA process. ECC Renewal: 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: Tel.: 061 284 2701 OR Environmental Assessment Unit Mr. Damian Nchindo, Tel: 061 284 2717, Email: damian.nchindo@met.gov.na
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	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.	The project is already underway for its construction phase. However, 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.

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Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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).	<p>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:</p> <p>Mr. Golden Siteketa (Senior Manager: Aerodromes and Ground Aids Section)</p> <p>Tel.: +264 83 235 2361</p> <p>Email: siteketag@ncca.com.na</p>
Convention on International Civil Aviation, Annex 14	<ul style="list-style-type: none"> • Annex 14 to the Convention on International Civil Aviation. • Chapter 4: Obstacle restrictions and removal • Chapter 6: Visual aids and donating of obstacles 	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 makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and 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.

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Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)</p>	<p>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>	<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: Ms. Maggy Shino (Petroleum Commissioner)</p> <p>Tel: +264 61 284 8209</p> <p>Email: Maggy.Shino@mme.gov.na</p>
<p>Forestry Act 12 of 2001</p>	<p>Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22(1)). The Act prohibits the removal of and transport of various protected plant species.</p>	<p>Should there be protected plant species, which are known to occur within the project site, these are required to be removed and a permit should be obtained from the nearest Forestry office prior to removing them.</p>
<p>Communal Land Reform Act 5 of 2002</p>	<p>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</p>	<p>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, property owners and that the that the project activities comply with the regulations provided in the Act.</p> <p>If required, the relevant authorisation should be obtained.</p>

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Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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.	A survey of heritage resources on the site is required and the necessary management measures and related permitting requirements must be taken pending the assessment findings.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	<p>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 of Namibia for relocation.</p> <p>Contact: Dr A. M. Nankela (Chief Archaeologist & Rock Art Specialist)</p> <p>Tel: 061 301 903, Email: archeology@nhc-nam.org</p>
Pollution Control and Waste Management Bill	<p>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.”</p> <p>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.”</p>	<p>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.</p> <p>No permit or license required.</p>
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.

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Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	No permit or license required.
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.	There site is covered by vegetation on certain areas and around the site itself. Should it be deemed necessary in future that certain project activities may trigger the removal of forests/vegetation in future, necessary measures should be taken to ensure minimum vegetation removal. In order 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 (Ministry of Agriculture, Water & Forestry) prior to removing them. Contact: Mr. Joseph Hailwa (Director: Forestry) Tel: 061 208 7663 Email: Joseph.Hailwa@mawf.gov.na
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 in the Republic of Namibia.	Certain site activities may lead to soil disturbance, and soil erosion. Some materials handling such as hydrocarbons (fuels) may spill on the ground resulting in soil pollution. Therefore, mitigation measures proposed in the EMP to conserve and

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Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
		<p>prevent or minimized erosion and pollution during operations should be implemented.</p> <p>No permit or license required.</p>
<p>Road Traffic and Transport Act, No. 22 of 1999</p>	<p>The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.</p> <p>Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.</p>	<p>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.</p> <p>Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits (access road) will be required from the Ministry of Works and Transport's Roads Authority.</p> <p>Contact: Mr. Eugene de Paauw (Specialist Road Legislation, Advice & Compliance)</p> <p>Tel: 061 284 7027, Email: dePaauwe@ra.org.na</p>
<p>Labour Act (No. 6 of 1992)</p>	<p>Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry ensures 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</p>	<p>The Proponent should ensure that the Plant construction, operations, and maintenance works, do not compromise the safety and welfare of workers.</p> <p>No permit or license required.</p>

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 Unisun 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**
- **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. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. IFC's Access to Information Policy reflects IFC's commitment to transparency and good governance on its operations and outlines the Corporation's institutional disclosure obligations regarding its investment and advisory services.

The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.

As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project Proponent to meet throughout the life of an investment. These standard requirements are briefly described below.

- **Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts**

This Standards sets out the Borrower's (Proponent's) responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing (IPF), in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs).

- **Performance Standard 2: Labor and Working Conditions**

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

- **Performance Standard 3: Resource Efficient and Pollution Prevention and Management**

The Standard recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle.

- **Performance Standard 4: Community Health and Safety**

ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

- **Performance Standard 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement**

Involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it will be minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented

- **Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources**

This Standard recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development and it recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. ESS6 also addresses sustainable management of primary production and harvesting of living natural resources, and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples whose access to, or use of, biodiversity or living natural resources may be affected by a project.

- **Performance Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities**

It ensures that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. ESS7 is also meant to avoid adverse impacts of projects on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, or when avoidance is not possible, to minimize, mitigate and/or compensate for such impacts.

- **Performance Standard 8: Cultural Heritage**

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The ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle.

- **Performance Standard 9: Financial Intermediaries (FIs)**

ESS9 recognizes that strong domestic capital and financial markets and access to finance are important for economic development, growth, and poverty reduction. FIs are required to monitor and manage the environmental and social risks and impacts of their portfolio and FI subprojects, and monitor portfolio risk, as appropriate to the nature of intermediated financing. The way in which the FI will manage its portfolio will take various forms, depending on several considerations, including the capacity of the FI and the nature and scope of the funding to be provided by the FI.

- **Performance Standard 10: Stakeholder Engagement and Information**

ESS10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

A full description of the IFC Standards can be obtained from http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1.

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 Unisun 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.

The summary of the environmental baseline of the project area is briefly explained under Chapter 4 as sourced from GeoPollution Technologies (2015) and where necessary, updated with site visit observations conducted on 5 August 2020.

4 THE RECEIVING ENVIRONMENT

The baseline (pre-project site conditions) information of a project area is crucial to understand the state of the environment before the project implementation. This aids in undertaking a concise assessment and make informed conclusions on the proposed impact of the project activities on environmental and social components and recommend practical and realistic management measures. The baseline conditions for the site and broader area that can be found in the initial EIA Report compiled in 2015. Some environmental baseline components presented below are these that have been found to be relevant with regards to the site observations.

4.1 Climate and Topography

Okatope is situated in a Savanna biome. Heavy rainfall here is mostly common between January and March, whilst May to September have little or no rainfall recorded. The average annual rainfall ranges between 400 to 450 mm per year, with a variation in rainfall of 30 to 40% and an average annual evaporation rate of between 2,800 and 3,000 mm per year. Although Okatope receives more rainfall than most of Namibia, it is still regarded as relatively arid and this causes water resources to be a scarce commodity that must be conserved and protected from pollution (GeoPollution Technologies, 2015).

According to GeoPollution Technologies (2015), the landscape is classified as Kalahari Sandveld with palaeodunes and pans. A low gradient anatomising to braided fluvial system, which periodically floods, is present in the area. The site is located within the Cuvelai Basin which drains into the Etosha Pan. Local topography is flat with limited surface flow. Rainwater would mostly pool and rapidly infiltrate into the sandy soils. A small surface water body is present 200 m west of the site which fills during the rainy season. Water collects in depressions (Oshanas) in the general area and shallow perched aquifers are typically formed by infiltrating water.

Local communities are often reliant on these water bodies and perched aquifers for livestock and own use.

Flooding is a concern in the greater area of the Cuvelai Basin. The proposed photovoltaic Plant falls into a general area classified as a high flood risk (GeoPollution Technologies, 2015).

According to the project site manager, due to the heavy rains received in the northern parts of the country, the site was flooded most of the year that dewatering of flooded project site areas had to be done.

4.2 Soils, Geology and Hydrogeology

The dominant soil in the area is cambic Arenosols which are weakly developed soils that extend to a depth of at least 1 metre. Arenosols are highly permeable; has low nutrient content; a coarse texture and are quartz rich. The light brown sandy loamy soils as observed on site in August 2020 are shown in **Figure 8** below.



Figure 8: Typical sandy loamy soils on the PV Plant site

Soil cover at the site is from the Kalahari Group, consisting of deposits of Quaternary and Tertiary age, underlain by Karoo deposits. The base of the Kalahari Group comprises the Ombalantu Formation that consists of a basal, red, fine grained, semi-consolidated with variable silicified mudstones but almost entirely consisting of clay described as a mudstone with varying grades of silicification.

The Kalahari Group consists mainly of unconsolidated formations, but some degree of consolidation may be present. Groundwater flow would be mostly through primary porosity but flow along fractures, faults (secondary porosity) and other geological structures present within the formations might take place where consolidated layers are present.

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In terms of hydrogeology, there is little information on the groundwater in the area is available as the groundwater is saline and a piped water supply system is available. A few shallow wells tapping into a shallow perched aquifer is present in the area. The shallow perched aquifer is replenished by regular rain and runoff events and water quality is therefore acceptable. This aquifer would however be vulnerable to pollution as the groundwater level is generally less than 10 m deep (GeoPollution Technologies, 2015).

4.3 Surrounding Land Uses

Since the project is in a rural area, it is therefore surrounded by villages such as lipanda, Onyaanya, Onashikookaya, Okakololo, Oshikulu, etc. It is bordered on both sides by village homesteads. There are two homesteads to the north, two to the northeast and east (**Figure 9 - right photo**) and two to the south. To the west, the site is bordered by a railway (**Figure 9 - left photo** and **Figure 10**).



Figure 9: One homestead on the eastern side of the project site and the railway



Figure 10: Train passing by the site on the railway on the 5th of August 2020

4.4 Services Infrastructure

Like the rest of the northern regions in the country, Oshikoto Region is one of the regions with well-established services infrastructures. The Region has good tarred and good-graded gravel road links and an airport (in Tsumeb), health centres, educational institutions, malls, and shops (in towns and settlements) and hospitality facilities, etc. Some of these services are well-placed around the project site area and nearby areas.

The following services infrastructure have been observed near the site and for the general project area and Region:

- **Water Supply**: The general project area is supplied with freshwater for domestic and agricultural use from shallow perched aquifers through shallow hand dug wells and from a network of water supply pipelines supplied from the Kunene River (GeoPollution Technologies, 2015)
- **Electricity**: There is a NamPower substation that supply power the surrounding towns and villages (for those who can afford private power supply from the main grid).
- **Transportation (traffic)**: The project area is accessed by the B1 road, local gravel roads and single tracks. There is also a railway that passes by the site. There is an airport in the Town of Ondangwa. although it is in Oshana Region, this airport serves the whole population from the northern regions of the country.
- **Telecommunication Services**: The Region and the project site area are well connected to the rest of the country and world via local network service providers. The main providers of this service in the area are Mobile Telecommunications Company (MTC Namibia).and in some instance, Telecom Namibia as well landlines in urban areas and in some rural residences
- **Waste management**: The proposed project site is in a rural set up were domestic waste is managed per household and dumped in small hand dug pits or selected open area within homesteads' crop fences. In other words, waste management in rural areas is not done the same way as in urban areas. This practice can be explained by the fact that in rural areas (villages), the amount of waste produced is mostly domestic (organic) waste and in smaller volumes compared to urban waste. However, this does not imply that rural waste has no environmental impact (Mafuta Environmental Consultants, 2020).

The project has adopted acceptable and standardized ways to deal with its waste generated from construction and eventual operational/maintenance works. This is done by transporting the waste to the approved to the Ondangwa Town Council's waste management site.

Detailed baseline information on the receiving environment can be obtained from the GeoPollution Technologies EIA Report (2015).

The baseline of the environmental components on which the project impacts were identified at the time of the environmental clearance renewal assessment was done for the site in 2015 and environmental management measures were provided for implementation, it is crucial that the implementation responsibilities of these measures are clearly indicated. Therefore, to ensure 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.

5 EMP IMPLEMENTATION ROLES AND RESPONSIBILITIES

The chapter gives a presentation of the roles of different parties involved in the project cycle (from construction to operations) 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.

5.1 The Proponent (Unisun Energy)

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 or an Environmental Control Officer (ECO). 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 Proponent Representative (PR) or the ECO. The Proponent'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 Environmental Officer (ECO) or they may appoint an external ECO to ensure EMP compliance throughout the project life cycle.

5.2 Environmental Control Officer (ECO) or 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 during the construction and operational phases. The ECO must be fully conversant with the Environmental Impact Assessment, Environmental Management Plan/Programme and environmental legislations, specifically the Environmental Management Act No. 7 of 2007 and its Regulations.
- Issue instructions to the Proponent where environmental considerations call for action to be taken.

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- 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 the Proponent and Interested and Affected Parties (I&APs).
- Conducting weekly site inspections for the construction phase and bi-annually site inspections for the operation and maintenance of all areas with respect to the implementation of the EMP (monitor and 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.

5.3 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 Proponent 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.

6 ENVIRONMENTAL MANAGEMENT ACTION PLANS

This chapter presents the potential impacts that were identified at the time the expired environmental clearance was issued, 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.

6.1 Previously Identified Potential Adverse Environmental Impacts

The potential negative impacts were identified during the preceding environmental assessment done for the site which led to the issuance of the ECC in 2015. Mitigation measures or management action plans were also made for these covered impacts. The impacts that had been identified and managed on site are as follows (per project phase):

Construction

- Impact on biodiversity and ecosystem
- Archaeological (heritage)
- Impact on utilities and existing infrastructure
- Risks of fire
- Dust (air pollution)
- Soil and water resources contamination
- Vehicular Traffic
- Noise
- Waste generation
- Visual impact
- HIV/AIDS, immigration, informal settlements, and property prices
- Health, safety, and security

Operational phase

- Ecosystem impact
- Birds (avifauna) impact
 - PV Plant impact on birds
 - Collision of birds with the project associated powerline
 - Electrocutation of birds on the powerline
 - Bird nesting activity on power line structures and panels
- Noise.
- Risks of fire
- Traffic (vehicular) safety.

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- Health, safety, and security
- HIV/AIDS, immigration, informal settlements, and property prices
- Impact on services infrastructure (infrastructure utilities); and
- Visual (aesthetic) impact
- Soil and water resources contamination

6.2 Current Site Status: Implementation and Effectiveness of the EMP

The implementation of the EMP and compliance during the validity period and after the expiry of the environmental clearance certificate (ECC) is given in the table (**Table 3**) below. The evaluated and compliance status in **Table 3** has been done based on the 2015 EMP compiled by GeoPollution Technologies. The status presents the progress that has been made to improve and ensure environmental management and sustainability between 11 November 2015 and 5 August 2020. The EMP compliance status has been updated with the 2020 observations done during the site visit on 5 August 2020.

6.3 EMP Requirements Compliance Status (Current Activities)

The 2015 management measures (actions) have been checked for compliance with regards of what has been happening on site and by site observations done by the Consultant in August 2020. The management actions are categorized as per implementation by the Proponent as follows:

- **Fully Compliant (C)** – the Proponent undertook or has been undertaking the project activity/ies according to the environmental management action recommended, therefore complies with the EMP requirements.
- **Partially Compliant** - the Proponent undertook or has been undertaking project the activity/ies according to the recommended environmental management actions, but not fully. This is the case where some management activities are partially compliant because they are either linked to other activities that are still pending implementation due to other reasons beyond the Proponent's control at the time or they are an ongoing action throughout the project phase (implementation is in the operational phase only, for instance). These actions would then change the compliance status from "partial" to "full".
- **Non-Compliant** – the Proponent did not undertake or has not been undertaking the project activity/ies as per the recommended environmental management actions in the EMP. The Proponent's commitment for improvement is required in this case to achieve full compliance or progressive partial compliance in the next EMP implementation check.

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Table 3: Environmental and Social Management Compliance from 2015 to 2020 (updated according to GeoPollution Technologies, 2015)

Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
PLANNING FOR CONSTRUCTION, OPERATIONS AND FUTURE DECOMMISSIONING					
EMP and training Implementation	EMP required licenses and permits	-Apply for the necessary permits from the various ministries, local authorities, and any other bodies that governs the construction and operations of the proposed activity. -Finalise negotiations and resolve any outstanding issues, if any, over the allocation of user rights and zoning of the property on which the proposed activity will be located.	-All contracts, permits, certificates and other legal documents on file.	Fully Compliant	August 2021
Labour and Recruitments	Appointments	-Appoint a contractor and employees and enter into an agreement which includes the EMP. -Ensure that the contents of the EMP are understood by the contractor, subcontractors, employees, and all personnel who will be present on site.	-Contracts on file	Fully Compliant	August 2021
Management system in HSE	Management	For all new employees: -Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.	-Documentation on file -Personal Protection Equipment (PPE) on site	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
		<ul style="list-style-type: none"> -Have the following emergency plans, equipment, and personnel in place to deal with all emergencies: -Risk Management / Mitigation / Environmental Management Plan / Emergency Response Plan and HSE Manuals. -Adequate protection and indemnity insurance cover for incidents. -Comply with the provisions of all relevant safety standards. -Procedures, equipment, and materials required for emergencies. 	<ul style="list-style-type: none"> -Signage related to restricted areas, dangerous areas, and PPE requirements on site -Emergency response material on site 		
Future environmental restoration or pollution remediation if ever require	Restoration Fund/Insurance	-To establish a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned, and environmental restoration or pollution remediation is required	-Financial statements of restoration fund/insurance	Partially Compliant	August 2021
Reporting system on monitoring aspects of construction, operation and decommissioning as outlined in the EMP	Reporting	<ul style="list-style-type: none"> -Establish a reporting system to report on aspects of construction, operation and decommissioning as outlined in the EMP. -Keep monitoring reports on file for submission with Environmental Clearance Certificate renewal applications where needed. 	-Monitoring Reports	Non-Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
ECC) Renewal every three years.	Environmental Clearance Certificate (ECC) Renewal	-Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the Environmental Clearance Certificate prior to expiry of the valid Environmental Clearance Certificate.	-Renewed Environmental Clearance Certificate	Non-Compliant	August 2021
CONSTRUCTION PHASE					
Enhanced skills and technology transfer to Onyaanya and subsequent promotion of economic development	People need skills to perform their jobs. The technology to do something is often not found locally. Development of people and technology are key to economic development	Unisun Energy must employ local, Namibian contractors where possible. Deviations from this practice should be justified appropriately.	-Proof of appointment of local contractors on file	Fully Compliant	August 2021
Increased spread of HIV/AIDS. Increased influx to Onyaanya;	New and existing developments attract people who seek work. This in turn can increase the	-Appointing reputable contractors who implement educational program on HIV/AIDS for all the staff, in the truck drivers, is imperative. Restricted employment for local people only should be practiced. Deviations from this practice should be justified appropriately.	-Proof of appointment of local contractors on file.	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
Increased informal settlement and associated problems	extent of informal settlements and its associated problems. The trucking for the delivery of construction material and equipment to the site could contribute to the spread of HIV / AIDS.	-Training of local people should be considered from the start. These measures will reduce the influx of newcomers to the area and thereby reduce growth in the informal settlement and maintain property prices			
Employment	Construction requires the employment of contactors and construction workers	Where skills exist local Namibian contractors must be employed. Deviations from this must be justified.	-Proof of appointment of local contractors on file	Fully Compliant	August 2021
Traffic	The site is located off the main B1 road in Okatope. Construction activities are expected to have	-Proper traffic management planning prior to construction. -Diversion or management of traffic when required. -Appropriate signage and warnings.	-Receive a weekly planning sheet from Contractor to know when traffic authorities and the public need to be informed of possible obstructions	Fully Compliant Fully Compliant (access road permit obtained)	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
	<p>some impact on the movement of traffic to the site when construction material and equipment must be transported to the site</p>	<p>-Existing tracks leading to the site should be used if possible and new tracks or roads should not be created</p>	<p>-A register of trucks arriving and leaving the construction sites will be kept. -A report should be compiled every month of the daily number of trucks accessing the sites. -Any complaints received regarding traffic issues should be recorded in the report together with steps taken to mitigate the impacts. -All information and reporting to be included in a final report once construction finishes.</p>		

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
Fire	<p>Outbreak of an uncontrolled fire due to the use of machinery or presence of open fires made by construction workers onsite.</p>	<p>-Safety talks and job hazard analysis to be done before work starts. -Firefighting measures as per the Material Safety Data -Sheets of the product should be adhered to. -In addition to this, all personnel must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the construction. Regular inspections should be carried out to check for these materials at the site. -It must be assured that sufficient firefighting resources are available. A holistic fire protection and prevention plan is needed. This holistic plan must include an emergency response plan and firefighting plan. Regular surveys of the fire-fighting equipment and water supply should be carried out.</p>	<p>-Supervision of work is required and reports of safe and unsafe practice to be brought to the attention of the health safety and environmental officer. -Any incidents reported must be recorded together with steps taken to mitigate the impacts. -All information and reporting to be included in a final report once construction finishes.</p>	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
		<p>-Experience has shown that the best chance to rapidly put out a major fire is in the first 5 minutes. It is important to recognise that 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. An integrated fire prevention plan should be drafted before construction commence.</p>			
Health, Safety and Security	<p>During the construction phase, construction personnel will access the site. Different excavation, earthmoving and transport equipment may be onsite. This increases the possibility of injuries. A risk to site security and</p>	<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>The Contractor should be obliged to adhere to the following:</p> <ul style="list-style-type: none"> ✓ Adhere to Health and Safety Regulations pertaining to personal protective clothing, first aid kits, warning signs, etc. ✓ Ensure that adequate emergency facilities, including first aid kits, are available on site. 	<p>-A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not repeat itself.</p> <p>-Inventory of all stock to be reported on a weekly basis.</p> <p>-All information and reporting to be included in a final report once construction finishes.</p>	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
	<p>personnel health and safety exist during this period.</p> <p>Damage to eyesight may occur during construction phase associated with the glare from the panels.</p>	<ul style="list-style-type: none"> ✓ Devise and submit a traffic management programme for sections of the roads to be closed or traffic diverted if necessary, during the delivery of equipment. ✓ Equipment that must be locked away on site and must be placed in a way that does not encourage criminal activities. ✓ Induction training for all who enter the site is required; and ✓ Security personnel to prevent unauthorised entry of the construction site <p>Ensure all workers are issued with protective eyewear when working with photovoltaic panels.</p>			
Existing Infrastructure and Underground Utilities	<p>Damage to existing infrastructure like power lines, pipelines, roads and railways.</p> <p>These impacts may result in the disruption of services supply to the region and beyond.</p>	<p>-Appointing qualified and reputable contractors is essential.</p> <p>-The contractor must determine exactly where amenities and pipelines are situated before construction commences (utility clearance e.g. ground penetrating radar surveys).</p> <p>-Liaison with the local authorities and suppliers of services are essential.</p>	<p>-Maps and location information of existing underground amenities on file.</p> <p>-Permission obtained from service providers for construction in or over existing servitudes.</p>	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
		<p>-Where the planned power line comes close to or need to cross existing structures (i.e. railway lines), the owners of such structures must be contacted to establish the exact locations of the structures as well as any restrictions that may be enforced by law.</p> <p>-For road construction, the B1 junction must be cleared with Roads Authority.</p> <p>-Any structure crossing the road must do so at a 90° angle or reasonably close to this.</p> <p>-Roads crossing the NamWater pipeline must do so with adequately constructed culverts as specified by NamWater. Power line poles may not be closer than 5 m to the centre of the pipeline.</p>	<p>-A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not repeat itself.</p> <p>-All information and reporting to be included in a final report</p>		

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
Dust	Dust may be generated during the construction if it involves the exposure of soil before new concrete surfaces are laid and 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>-It is recommended that regular dust suppression be included during construction when dust becomes an issue. Personnel are to be issued with dust masks for health reasons when needed.</p> <p>-Excavations and earthworks during strong northeasterly wind conditions should be avoided to prevent dust from being a nuisance if dust suppression is not adequate.</p>	<p>-Regular visual inspection.</p> <p>-A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.</p> <p>-All information and reporting to be included in a final repo</p>	Fully Compliant	August 2021
Noise	Noise because of operations of trucks, heavy machinery, and construction noise.	<p>-The World Health Organization (WHO) guideline on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment can be followed during the construction phase. These limits noise levels to an average of 70 dB over a 24-hour period with maximum noise levels not exceeding 110 dB during the period. It is recommended that a survey of the noise levels be carried out if complaints are received.</p>	<p>-A complaints register must be maintained in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.</p>	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
		<p>-Construction workers to be issued with hearing protection where needed.</p>	<p>-All information and reporting to be included in a final report.</p>		
<p>Waste Production</p>	<p>The ability of products and building rubble to act as a waste which must be cleaned up or removed off-site.</p> <p>The construction at the plant will produce waste in the form of domestic waste, building rubble or any other waste because of spillage or leakage from cleaning and painting materials.</p> <p>Any soil polluted by hydrocarbons that may be encountered during the construction phase should be treated as hazardous waste</p>	<p>-Due to the nature of some hazardous materials they should be disposed of in an appropriate way at an appropriately classified waste disposal facility. See the available from suppliers if the user is not sure how to dispose of the substance.</p> <p>-Liaise with the nearest Municipality regarding waste and appropriate handling of hazardous waste.</p> <p>-Temporary waste disposal facilities should be present on site. This should include separate containers for products that can be re-used or recycled.</p> <p>-Removal of waste should be at regular (weekly) intervals to maintain visual orderliness, but more so to not give time for liquid waste to enter the soil substrate. Dry waste is at risk of increasing the dust / litter impact so should be removed regularly.</p>	<p>-Regular visual inspection.</p> <p>-A register of waste produced, and disposal methods should be maintained.</p> <p>-All information and reporting to be included in a final report.</p>	<p>Fully Compliant</p>	<p>August 2021</p>

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
		<p>Adequate temporary ablution facilities must be erected at the construction site if no alternative facilities exist.</p>			
<p>Groundwater, Surface Water 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.</p> <p>Accidental spills of fuel, as well as paint spills and other chemicals might occur.</p> <p>Groundwater might spread pollutants to neighbouring receptors and may create an impact on underground infrastructure</p>	<p>-All precautions are to be taken to prevent contamination of the soil as this could enter the ecosystem.</p> <p>-Appointing qualified and reputable contractors is essential. Proper training of construction personnel would reduce the possibility of the impact occurring.</p> <p>-Any fuel spills must be reported, and remediation action taken.</p> <p>-Polluted soil and building rubble must be transported away from the site to an approved, appropriately classified waste disposal site. Polluted soil can be remediated.</p> <p>-Confirm Material Safety Data Sheet (MSDS) information for any fuels, oils, lubricants, or chemicals that must be discarded.</p>	<p>-Report form for all spills or leaks during construction is to be completed by Contractor and submitted to the HSE department.</p> <p>-All information and reporting to be included in a final report</p>	<p>Fully Compliant</p>	<p>August 2021</p>

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
Heritage Impact	Sites with archaeologically or culturally important significance might be uncovered during excavations. These can include graves, stone walls or cultural artefacts.	If such a site is found during the construction phase the construction process must be halted and the relevant authorities must be informed. Construction may only continue at that location once permission has been given. Firstly, the Namibian Police must be informed. Secondly, the National Monuments Council dealing with heritage should be informed.	-Record of any discoveries and proof of notifications to authorities on file. -All information and reporting to be included in a final report.	Fully Compliant (ongoing)	August 2021
Visual Impact	This is an impact that affects the aesthetic appearance of the construction site	-Appoint reputable contractor. -Keep construction site neat and dispose of waste regularly.	-A complaints register must be maintained in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon. -All information and reporting to be included in a final report.	Fully Compliant (ongoing)	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
Ecosystem and Biodiversity Impact	Impacts on the ecosystem from the increase in the human footprint to the area with the result of habitat destruction, land degradation, illegal collection of plant materials and poaching by construction workers etc.	<ul style="list-style-type: none"> -Appoint reputable contractor. -Restrict construction activities and land clearing to the construction site to prevent unnecessary habitat loss. -All employees should be educated about the value of biodiversity. -Strict conditions prohibiting harvesting and poaching of fauna and flora should be part of employment contracts. -Disciplinary actions to be taken against all employees failing to comply with contractual conditions 	<ul style="list-style-type: none"> -A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not repeat itself. -All information and reporting to be included in a final report. 	Fully Compliant	August 2021
Community Liaison	Expectations and general / possible grievances of surrounding and community members regarding the project implementation	<ul style="list-style-type: none"> -A Community Liaison Offices should be appointed and a Community Communication plan be drafted which will include a register for public and community grievances and including remediation action proposed. -Communication regarding the project progress and maintenance should be provided to surrounding and local communities. 	<ul style="list-style-type: none"> -A grievance register should be kept as well as minute of all meeting which are held with community members or the traditional authority. -All information and reporting to be included in a final report 	Fully Compliant	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
Cumulative impact	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 measures for the different impacts will help prevent this impact.	-Final summary report based on all other impacts must be created to give an overall assessment of the impact of the Operational Phase.	Fully Compliant (ongoing)	August 2021

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Aspect	Activity	Action / Management measures recommended in 2015	Proof of Compliance	*Compliance Status	Next EMP Compliance Update/Reporting
	<p>Possible cumulative impacts associated with the construction phase include increase in traffic frequenting the site. Therefore, an increase in emissions from these vehicles will decrease the air quality around the site. Wear and tear on roads and increased risks of road traffic incidences could increase.</p> <p>Traffic and construction would further increase noise impacts in the area.</p>				
<p>Operational Phase EMP Implementation – Compliance to be checked and updated once the activities of this phase have commenced (estimated compliance check in August 2021)</p>					

End of construction phase:

- All equipment, infrastructure/structures and other items used for construction should be safely removed from site and disposed of accordingly or stored at designated areas on or offsite.
- All construction waste materials, including possible rubbles should be collected and transported to the approved waste sites in Ondangwa.

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- The topsoil that were stripped from certain site areas to enable construction works and can be returned to its initial position, should be returned. This is to avoid unnecessary stockpiling of site soils which would leave them prone to erosion.
- All construction pits (if any) should be rehabilitated and returned to their pre-excavation state as possible.

6.4 Updated Environmental and Social Management Measures (If Any)

The aim of the management actions in this EMP is to avoid potential operational 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 2015 project EMP (from page 3 to page 21). 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.

The site visit and observations from 5 August 2020 found that there is 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.

If found to be necessary on the next EMP Compliance Monitoring Check, new or updated management measures or mitigation would be recommended for implementation. This would probably focus more on operational phase activities as it is likely that construction phase would be completed by August 2021. Otherwise, recommendations would be done based on the progress of activities on site.

The aim is 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.

7 ENVIRONMENTAL MONITORING, COMPLIANCE AND AUDITING

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

7.1 Monitoring of EMP Implementation and ECC Renewal

- **Environmental (during the validity period of the ECC):** Annual compliance monitoring of the EMP implementation should be undertaken throughout the project cycle, i.e. once (every 12 months) throughout the operations. Environmental monitoring reports are to be compiled and

submitted to the Department of Environmental Affairs and Forestry (DEAF) for archiving. This practice will make the ECC renewal easy when it is about to expire in future. 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. **The next compliance monitoring is estimated for August 2021.**

- **Environmental Compliance Checklist:** To make impact monitoring and EMP compliance easy, the Proponent should keep an Impact-Indicator Checklist that can be used by the ECO and updated every 6 months. The checklist should contain the management action recommended in the EMP in a “Questionnaire” format, observations, recommended further action, date of monitoring and next proposed monitoring date.

7.2 Environmental Awareness

Unisun 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 ECO, 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.

8 RECOMMENDATIONS AND CONCLUSIONS

8.1 Recommendations

The Environmental Consultant carried out a site visit and observation with the aim of assessing the implementation of the EMP on the project site for the purpose of the project's ECC renewal. The project is of small to medium-scale level and activities are well limited within the site boundaries only. According to the observations on site on 5 August 2020, it was found that although not all potential (negative) impacts that were anticipated during the EIA study in 2015 have come to pass, the Proponent has been fully

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compliant with most of the EMP requirements as recommended for the construction phase which they have been busy with at the time of the site visit. 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. The partial compliance has been also recorded for activities like access road permit acquisition. This application has been submitted to the Roads Authority and pending approval. The required permits such as the access road has been applied for to the Roads Authority and approved, i.e. the road access permit has been issued. The road has been upgraded to standard in preparation for the operational phase, although it has been currently used for construction activities' related vehicles already.

Another partial compliance recorded is also on monitoring because there is no record of EMP compliance monitoring (audit) done for the site since the issuance of the expired ECC. However, this can be greatly improved on the way forward, with the assistance of the Environmental Consultant or project Safety, Health and Environmental Officer (SHE / Environmental Control Officer) and the Proponent's full commitment and co-operation.

Therefore, the Environmental Consultant is confident that the potential negative impacts associated with the project activities on site can continue to 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, provided that:

- All the management measures (mitigations) provided in the initial EMP continue to be implemented effectively with compliance emphasis pointed out in this ECC Renewal Report, specifically Chapter B, section 6.3 (**Table 3**) and **where required, improvement should be effectively put in place.**
- All required permits, licenses and approvals for the project activities are obtained as required (please refer to the Permitting and Licensing in **Table 2** of this document).
- All the respective management (mitigation) measures provided in the initial project EMP drafted in 2015 (also as presented for the current project (phase) activities under Table 3 of this document) are effectively implemented progressively per project phase and monitored as stipulated to achieve full EMP implementation compliance.
- Where required and emphasized, improvements should be made with full commitment and effectively put in place (again please refer to **Table 3** of this document).
- The Proponent and all their project workers or 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 avoid very late renewal of the ECC, the Proponent' Safety, Health and Environmental Officer (or an ECO) should effectively conduct Environmental (EMP) Compliance Monitoring and most importantly, ensure timely renewal of the ECC. A Renewal application can be submitted at least 4 months before the expiry date of the valid ECC to allow time for the evaluation of the ECC Renewal report by the DEAF; and
- The next EMP Compliance check (EMP implementation monitoring) should be done in August 2021, which will see progress reporting on the current and activities that will be carried on site between August 2020 and August 2021. The monitoring exercise can be undertaken either by the project Environmental Control / Health, Safety and Environment Officer or an independently appointed Environmental Assessment Practitioner (Environmental Consultant). An Environmental Audit/Compliance Report shall be compiled for every monitoring and submitted to the DEAF at the Ministry of Environment, Forestry and Tourism for archiving. This would make the next ECC Renewal easy because of an in-between track record of monitoring progress prior to the expiry date of the valid ECC.

8.2 Conclusions

The Environmental Consultant acknowledges that the ECC has been expired for almost 2 years without being renewed and this should have been done then (before 11 November 2018). This was probably due to a lack of understanding on the first ECC's validity by the Proponent which they have also admitted to and committed to make sure that it will not happen again. The Environmental Consultant recommends that the expired ECC be renewed so that the Proponent can continue with the project activities (construction) to enable the commencement of the operational phase and ensure timely renewal before the end of the next 3 years counting from the new ECC date. Compared to the old ECC format, there will be an improvement to ECC renewals because the new ECC format also clearly shows the ECC validity period, and this will greatly assist the Proponent in keeping track of the end date and ensure timely renewal.

Furthermore, based on site observations (conducted on 5 August 2020), the site is generally well-kept, and the current works are well within the initial EMP requirements for the construction phase, which is currently underway. The solar panels will then be installed, and operational works will start soon after. The Environmental Consultant is of the same hope that the Proponent (Unisun Energy) will continue to maintain the same commitment towards environmental sustainability and ethics for their operational phase, once the ECC has been renewed and ensure its renewal on time, once again.

Therefore, it is crucial for the Proponent and their contractors 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.

Unisun Energy (Pty) Ltd: Okatope Solar Power Plant ECC Renewal

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

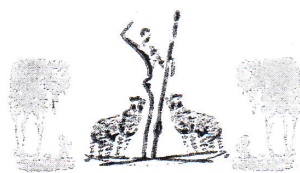
9 REFERENCES LIST

GeoPollution Technologies. (2015a). *Construction and Operations of a 5 MW Photovoltaic (Solar) Power Plant situated at Okatope, Oshikoto Region: Environmental Impact Assessment Scoping Report*. Windhoek: Unpublished.

GeoPollution Technologies. (2015b). *Construction and Operations of a 5 MW Photovoltaic (Solar) Power Plant situated at Okatope, Oshikoto Region: Environmental Management Plan (EMP)*. Windhoek: Unpublished.

Mafuta Environmental Consultants. (2020). *Environmental Scoping Assessment (ESA) for the Proposed Construction and Operation of a Radio Transmission Tower in the Omindamba B Village of the Ruacana Constituency, Omusati Region*. Windhoek: Unpublished.

APPENDIX A: LEASEHOLD OF THE SITE BY THE ONDONGA TRADITIONAL AUTHORITY (LEASE AGREEMENT) GRANTED IN JANUARY 2015



ONDONGA TRADITIONAL AUTHORITY

PO Box 70, Ondangwa, Tel: 065-245 832/240 601 Fax: 065-245 832

DATE/ESIKU 27-01-2015

**THE SECRETARY
COMMUNAL LAND BOARD
OSHIKOTO**

EYINDILO LYEVI LYOKUTHITHA / APPLICATION FOR RIGHT OF LEASEHOLD.

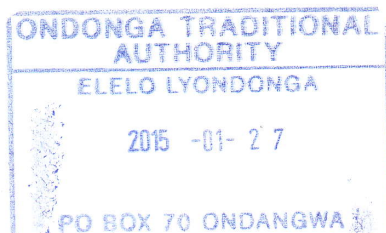
1. KATRINA LUGODHI ELIAS ID. 8501211003
OKWA PEWA EVI LYOOHEKITA _____ LYOKU THITHA / EHALA OLI LI
MOMUKUNDA ONANBAMBA EHALA OKWELI PITIKILWA.
ELELO KALINA UUDHIGU WASHA MOKU GANDJA EHALA NDIKA.

2. THIS IS TO CERTIFY THAT KATRINA LUGODHI ELIAS
ID. 8501211003 HAS BEEN GRANTED A RIGHT OF LEASEHOLD
_____ HECTARES IN ONANBAMBA VILLAGE AS SUCH
THE ONDONGA TRADITIONAL AUTHORITY DOES NOT OPPOSE SUCH
ADMISSION, WHICH IS THERE FORE GIVEN.

PEHA LYELELO LYONDONGA / YOUR TRULY.

PP. J. J. J. J.
**SENIOR TRADITIONAL COUNCILLOR.
ONDONGA TRADITIONAL AUTHORITY**

PP. J. J. J. J.
**SECRETARY
ONDONGA TRADITIONAL AUTHORITY**



APPENDIX B: EXPIRED ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC)



REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT AND TOURISM

Tel: +264 61 2842701
Fax: +264 61 240339
Email: saima@met.na

CNR of Dr. Kenneth David Kaunda Street
& Robert Mugabe Avenue
Private Bag 13306
Windhoek

Enquiry: Ms. Saima Angula

04th November 2015

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

Managing Director
Unisun Energy (Pty) Limited
P.O. Box 3885
Windhoek

Dear Sir or Madam

SUBJECT: ENVIRONMENTAL CLEARANCE FOR THE PROPOSED CONSTRUCTION AND OPERATIONS OF A 5MW PHOTOVOLTAIC (SOLAR) POWER PLANT SITUATED IN OKATOPE, OSHIKOTO REGION, NAMIBIA

The Environmental Impact Assessment and Environmental Management Plan submitted is sufficient as it made provisions of the environmental management concerning the proposed activities. From this perspective regular environmental monitoring and evaluations on environmental performance should be conducted. Targets for improvements should be established and monitored from time to time.

This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project.

On the basis of the above, this letter serves as an environmental clearance for the project to commence. However, this clearance letter does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from this project's activities. Instead, full accountability rests with Unisun Energy (Pty) and his/ her consultants.

This environmental clearance is valid for a period of (three) 3 years, from date of issue unless withdrawn by this office.

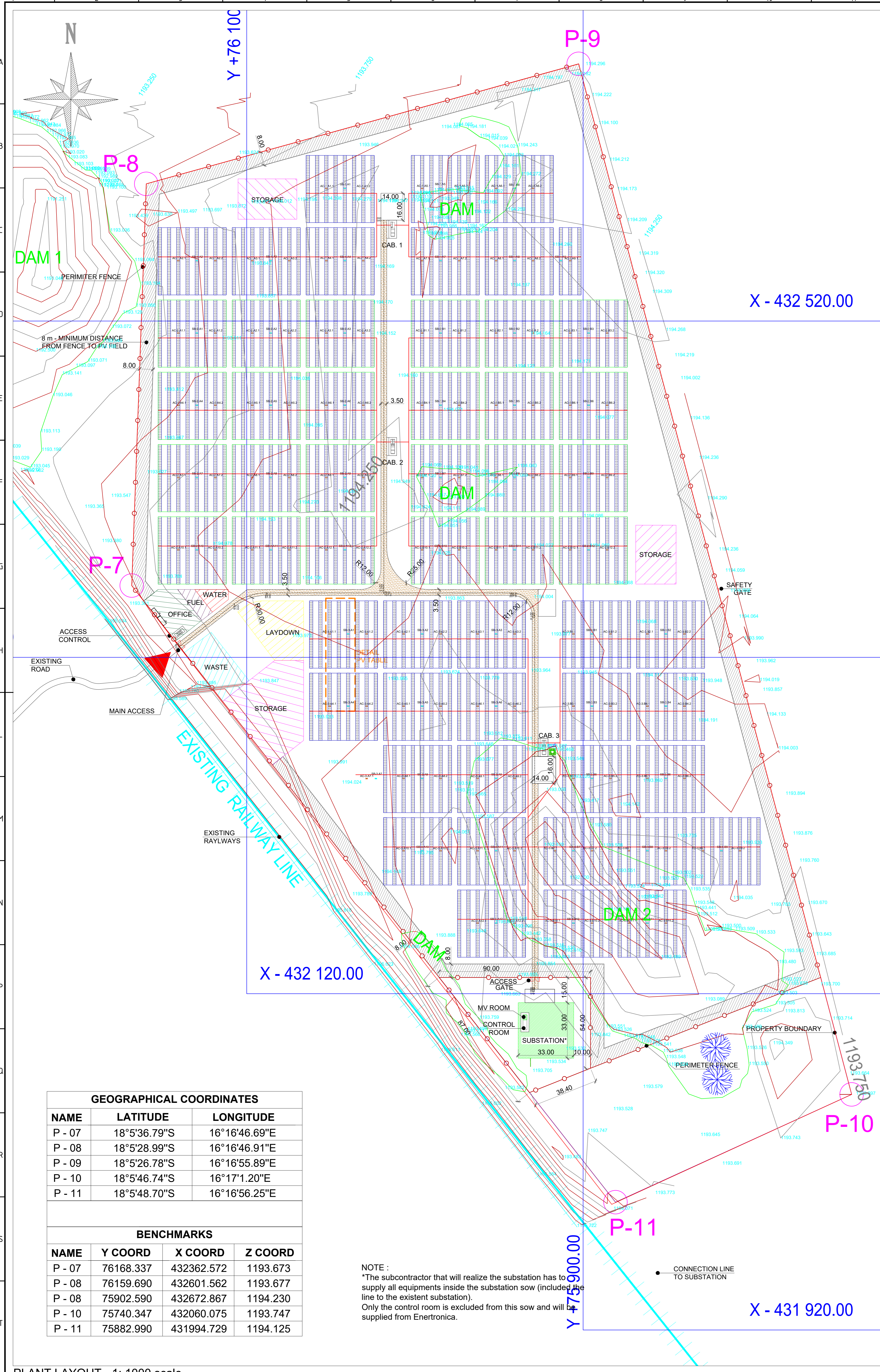
Yours sincerely,

Teofilus Nghitila
ENVIRONMENTAL COMMISSIONER



All official correspondence must be addressed to the Permanent Secretary

APPENDIX C: LAYOUT OF THE PROJECT SITE/PV PLANT



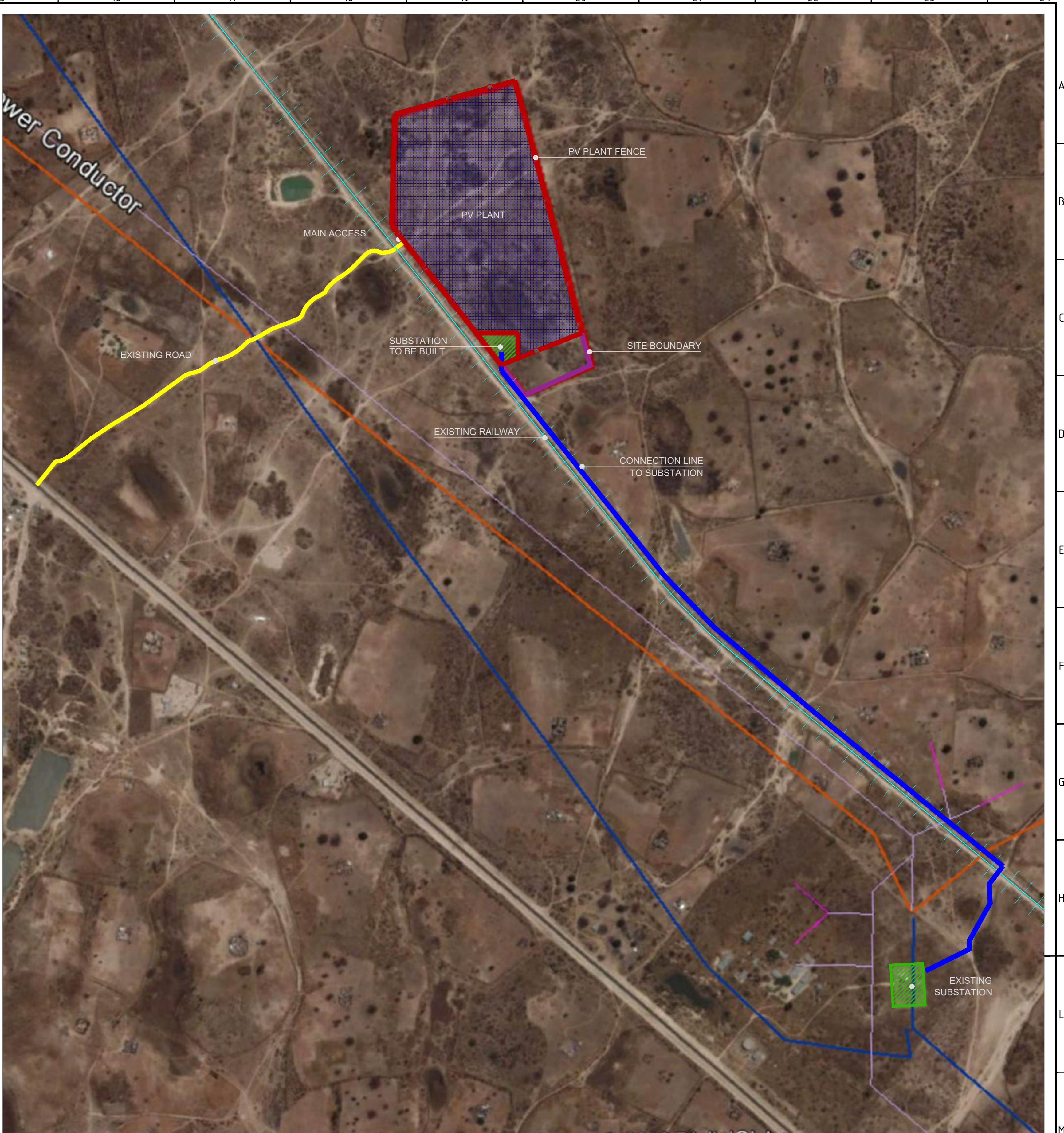
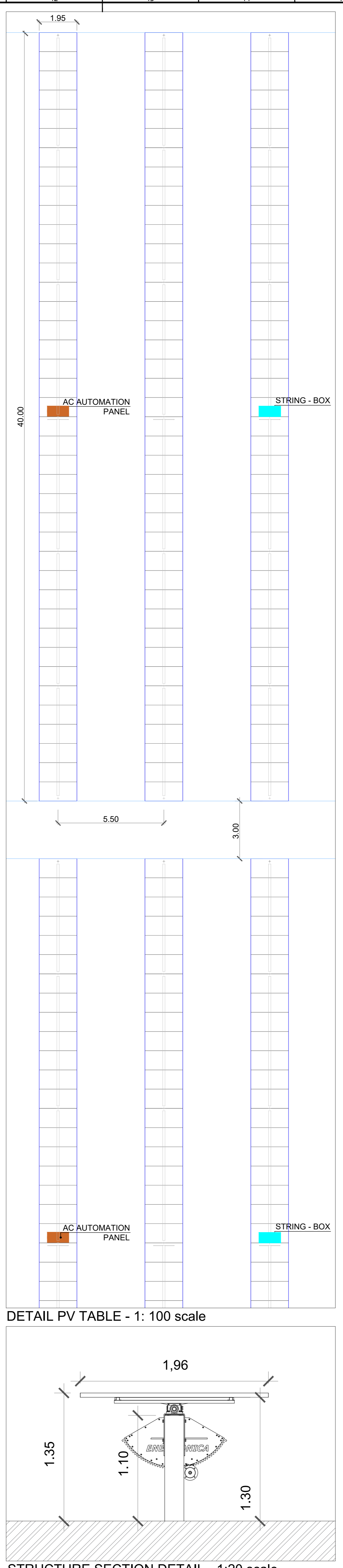
GEOGRAPHICAL COORDINATES

NAME	LATITUDE	LONGITUDE
P - 07	18°5'36.79"S	16°16'46.69"E
P - 08	18°5'28.99"S	16°16'46.91"E
P - 09	18°5'26.78"S	16°16'55.89"E
P - 10	18°5'46.74"S	16°17'1.20"E
P - 11	18°5'48.70"S	16°16'56.25"E

BENCHMARKS

NAME	Y COORD	X COORD	Z COORD
P - 07	76168.337	432362.572	1193.673
P - 08	76159.690	432601.562	1193.677
P - 08	75902.590	432672.867	1194.230
P - 10	75740.347	432060.075	1193.747
P - 11	75882.990	431994.729	1194.125

NOTE :
 *The subcontractor that will realize the substation has to supply all equipments inside the substation sow (included the line to the existent substation).
 Only the control room is excluded from this sow and will be supplied from Enertronica.



LEGEND

[Red line]	SITE BOUNDARY
[Red dashed line]	PV PLANT FENCE
[Blue line]	INTERNAL ROAD
[Yellow line]	EXISTING ROAD
[Green box]	SKID 2500 - CONVERSION CABIN
[Blue box]	SKID 1100 - CONVERSION CABIN
[Blue grid]	PV TABLE - 40 MODULES
[Green hatched box]	EXISTING SUBSTATION
[Red hatched box]	SUBSTATION TO BE BUILT *
[Blue line]	RAYLWAYS
[Green line]	MV CONNECTION LINE
[Red line]	LV CONNECTION LINE
[Orange line]	POWER SUPPLY
[Green circle]	PYRANOMETER
[Green square]	METEO STATION
[Red triangle]	ACCESS POINT
[Orange box]	AC AUTOMATION PANEL
[Blue box]	STRING BOX

ELECTRICAL CONFIGURATION

INSTALLED POWER (DC)	5.781,6 kWp
MODULES TYPE	CANADIAN SOLAR CS6U 330P
MODULES POWER (DC)	330 Wp
TOTAL MODULES	17520
MODULES PER STRING	20
NUMBER OF STRINGS	876
INVERTER TYPE	5.884 MVA
NUMBER OF STRING BOXES	56
NUMBER OF AC PANELS	110

ENERIRONICA

OKATOPE PV Plant 5,7816 MW_p

TRACKER STRUCTURES

Review Date	N	Review Description	Designed	Verified	Approved
26/11/2019	00	Initial drawing	MAIN SOLUTION	MAIN SOLUTION	
17/03/2020	01	Addition of latest topographic survey			

SCALE: - DRAWING: G.001A DESCRIPTION: GENERAL LAYOUT OF PV FIELD IN NEW SURVEY

DATE: 17/03/2020