

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A 10MW MERCHANT SOLAR PHOTOVOLTAIC PLANT OUTJO – GERUS FARM, KUNENE REGION -NAMIBIA



ENVIRONMENTAL SCOPING REPORT FINAL

JUNE 2021



Prepared by: Junior Baiano Industrial
Consultants cc
Postal Address: PO Box 23537, Windhoek
Contact Person: Fredrich Nghiyolwa
Contact number: +264 (61) 219 773
Cell: +264 (0) 81 1472029
Email: fredrich@jbic.com.na

Prepared for: Sino Energy (PTY) LTD
Postal Address: PO Box 23537, Windhoek
Contact Person: Mr. Ferdinand Nghiyolwa
Cell: +264 (0) 811291980
Email: ferdi@ino-invest.com

Contents

EXECUTIVE SUMMARY	1
1. CHAPTER ONE: BACKGROUND	3
1.1. INTRODUCTION	3
1.2. PROJECT LOCATION.....	4
1.3. PROJECT OVERVIEW	6
1.4. PV TECHNOLOGY SPECIFIC INFRASTRUCTURE	6
1.5. ACCESSIBILITY	7
1.6. INFRASTRUCTURE AND SERVICES.....	7
1.7. NEED AND DESIRABILITY	8
1.8. PROJECT ALTERNATIVES	9
1.8.1. SITE LOCATION ALTERNATIVES.....	9
1.8.2. SITE LAYOUT ALTERNATIVES.....	10
1.8.3. TECHNOLOGY ALTERNATIVES.....	10
1.8.4. NO-GO ALTERNATIVE	11
1.8.5. CONCLUSION	11
2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK	12
2.1. INTRODUCTION	12
3. CHAPTER THREE: RECEIVING ENVIRONMENT	27
3.1. SOCIO-ECONOMIC	27
3.2. CLIMATE.....	27
3.3. FAUNA	27
3.3.1. MAMMALS.....	27
3.4. FLORA.....	28
3.4.1. TREES / SHRUBS, HERBS AND GRASSES	28
3.5. GEOLOGY.....	29
3.6. 3.5 HYDROLOGY	29
4. CHAPER FOUR: PUBLIC CONSULTATION	32
4.1. OVERVIEW	32

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS	36
5.1. OVERVIEW	36
5.2. ASSESSMENT OF IMPACTS	36

List of Figures

Figure 1: Proposed Solar Farm Site	5
Figure 2: Circuit Layout	8
Figure 3: Completed PV Panel Mounting	8
Figure 4: Completed PV Panel Structures	8
Figure 5: PV Panel Inverters	8
Figure 6: Land cover on locale.	29
Figure 7: Bird diverters for use on transmission lines, must be frequently replaced during the project operation phase.	31
Figure 8: EIA Public meeting venue.	33

List of Tables

Table 1: Legal Compliance	13
Table 3: Outjo Avifauna red species list	30
Table 4: Outjobird species sensitivity	30
Table 5: Details of public notification of the EIA study	33
Table 6: Key findings of the public consultation process:	34
Table 7: Assessment Criteria	36
Table 8: Impact Significance	37
Table 9: Environmental Impacts and Aspects Assessment	39

Acronyms

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
PV	Photovoltaic

EXECUTIVE SUMMARY

Junior Baiano Industrial Consultants (JBIC) cc has been engaged **Sino Energy (PTY) LTD** to conduct an Environmental Impact Assessment (EIA) and develop an Environmental Management Plan (EMP) for the Construction and Operation of A 10MW Merchant PV Solar Plant and Transmission Line at Gerus Farm in Outjo, Kunene Region – Namibia and to apply for an Environmental Clearance Certificate for the proposed project.

The proposed establishment triggered the application for an environmental clearance certificate as the following listed activity will be triggered by the proposed energy generation activities.

ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES

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

Anticipated Environmental Impacts

- Low potential environmental impacts because the proposed site is already disturbed from human encroachment.
- Adding on a management plan has been developed to mitigate any anticipated possible impacts of the project to the environment.
- Relative or moderate social impact (positive)

Social Impact

The project is generally expected to improve the socio-economic environment of Outjo through a major boost in business through integrations, employment and improved transport system on the long term. Interested and Affected Parties were notified of the project through Site notices and newspaper adverts and all relevant information on consultation is covered in Chapter 4 of this document and Appendix A of the document.

Recommendation

It is concluded that most of the impacts identified during this Environmental Assessment can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the solar farm. Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and durations. All developments could proceed provided that general mitigation measures as set out are implemented as a minimum.

It is therefore recommended that the proposed solar farm get an approval receive Environmental Clearance, provided that the recommendations described above and the EMP are implemented.

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

The National Integrated Resource Plan (NIRP) developed by the Namibian Government in 2016 has projected a significant growth in the country's electricity demand and estimates that an investment in the range of N\$90-97 billion (2016) is needed over the next 20 years. Given other sectoral priorities in the country, the Namibian Government cannot meet such a significant investment requirement in a single sector of the economy. Accordingly, private sector investment sources have been deployed through the acceleration of IPPs for the development of the Power Sector in the country (GRN(MME), 2016).

It is beyond this background that, Sino Energy (PTY) LTD intends to spearhead the construction and installation of a 10MW solar power (PV) structures (solar farm) on a 10 ha. piece of land and a powerline in Outjo.

In terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) and the Electricity Supply Industry National Policy for Independent Power Producers (IPPS) In Namibia (2017), an EIA is required to obtain an Environmental Clearance Certificate from the Ministry of Environment and Tourism (MET) before the project can proceed.

Furthermore, as per the requirements of the Environmental Management Act No. 7 of 2007, Sino Energy has appointed JBIC to conduct an Environmental Assessment (EA) and develop an Environmental Management Plan (EMP) for the proposed project. This has been followed by an application for Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET) : Directorate of Environmental Affairs (DEA).

In this respect, this document forms part of the application to be made to the DEA's office for an Environmental Clearance certificate for the proposed solar farm development and powerline construction, in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts regulations (GN 30 in GG 4878 of 6 February 2012)

1.2. PROJECT LOCATION

The project site is located on Gerus Farm In Outjo, Kunene Region: Namibia.

The Locality Map Fig 1) gives a local layout view of the project site:

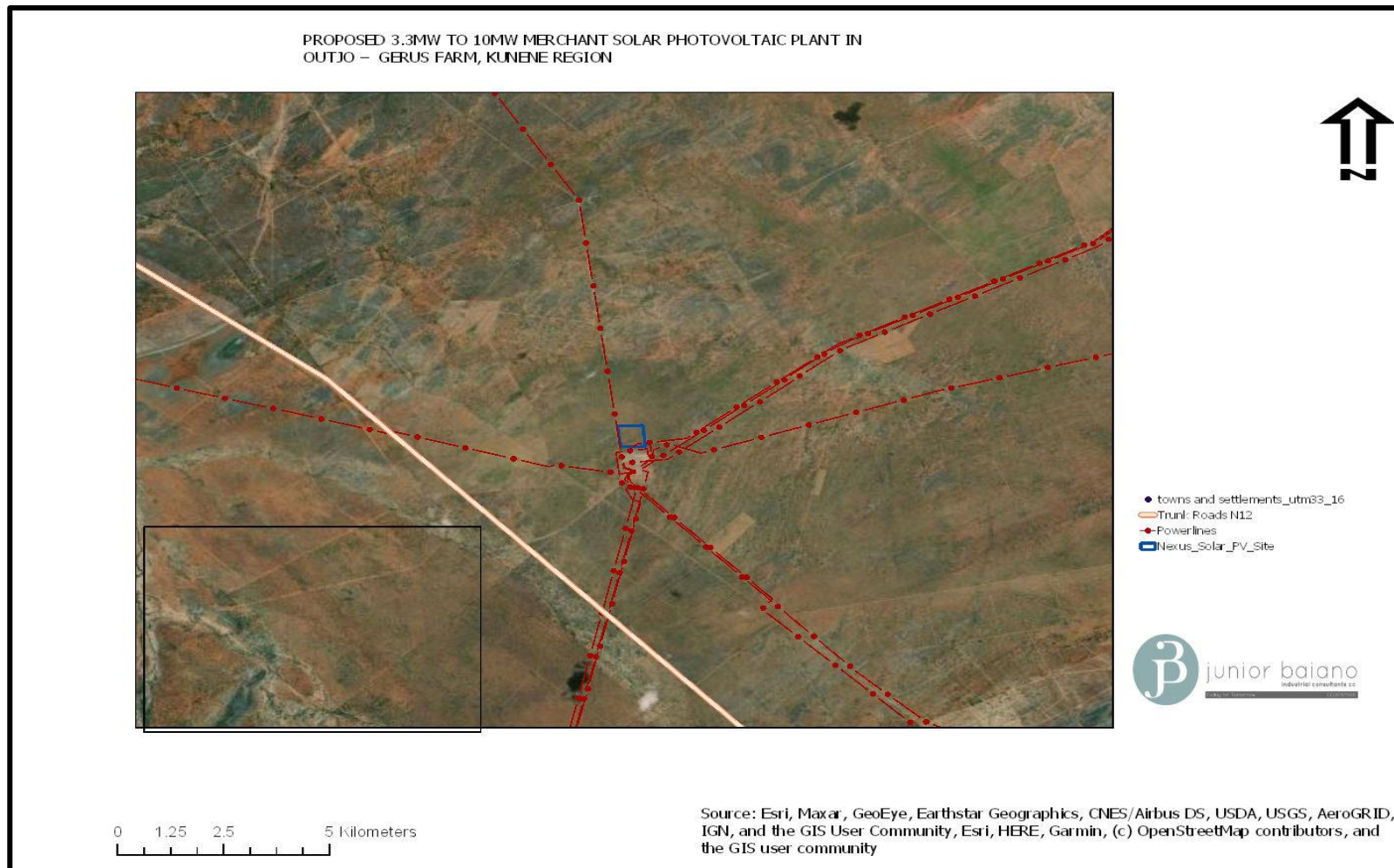


Figure 1: Proposed Solar Farm Site

1.3. PROJECT OVERVIEW

Sino Energy intends to construct and operate a Photovoltaic (PV) Solar Power Plant in Outjo, Kunene Region-Namibia. The proposed solar farm entails the construction and operation of a 10 MW PV development, associated infrastructure and services for the provision of renewable electricity to the national power grid.

This project entails the transformation of bare land to accommodate the proposed Solar Power plant, associated infrastructure and services. The infrastructure proposed for the entire Solar Power Plant (project) includes but is not limited to inter alia:

1.4. PV TECHNOLOGY SPECIFIC INFRASTRUCTURE

PV systems produce energy by converting solar irradiation into electricity. A PV system consists of PV panels that encase the solar cells. Solar cells are solid-state semiconductor devices that convert light into direct-current electricity. The top layer of the silicon portion of a solar panel is made from a mixture of this silicon and a small amount of phosphorous, which gives it a negative charge. The inner layer, which constitutes the majority of the panel, is a mix of silicon and a little bit of boron, giving it a positive charge.

The place where these two layers meet creates an electric field called a junction. When light (or photons) hits the solar cell, before it gets to the silicon crystal to make electricity it passes through a glass cover on the panel and an anti-reflective coating, which stops photons from reflecting off of the panel and being lost. The photons are absorbed into the junction, which pushes electrons in the silicon out of the way (See Figure 3). If enough photons are absorbed, the electrons are pushed past the junction and flow freely to an external circuit.

To convert the Direct Current (DC) to Alternating Current (AC) an inverter will be used. The AC energy can then be used to power anything that uses electricity. In fact, they are just larger versions of the cells used in solar calculators. The front surface of the solar panel is toughened glass with an anti-reflective coating to maximise the light captured by the solar cells and reduce glare back towards the atmosphere. The PV panels are predominantly black in appearance – when viewed directly from the front; however, from close-up, a grid of silver contacts is clearly visible.

The proposed PV developments will entail the following infrastructure –

-The DC current is converted to 230V AC current by inverters, the Voltage is stepped up by Transformer and transmitted over transmission network. Voltage is then stepped down for consumer consumption (230V).

The proposed 5MW solar energy facility would consist of the following:

- Photovoltaic component: numerous rows of PV panels and associated support infrastructure to generate electricity, one (1) 10 MW PV Developments of about 10ha;
- DC-AC current inverters and transformers.
- PV module generate DC current (12V, 24V, 48V)
- Transmission corridor: one overhead 19kV transmission line (500m) located within the transmission corridor to connect the proposed onsite substation to the existing main substation, this will follow an existing powerline servitude in the area, to minimise impacts.
- On-site substation: the on-site substation to collect the electricity produced on site and step it up to the correct voltage to transfer via the transmission line to the existing main central substation.
- Buildings: operation and maintenance buildings to house equipment and a guard cabin for security.
- Additional infrastructure: includes a boundary fence for health, safety and security reasons; water supply infrastructure for groundwater abstraction and storm water infrastructure, if required.

1.5. ACCESSIBILITY

There is an existing access road to the proposed solar farm site.

1.6. INFRASTRUCTURE AND SERVICES

Water: There is a borehole within 30m proximity.

Ablution: During the construction phase, temporary toilets will be used.

Communication: The site is connected with MTC, TN Mobile and satellite phones.

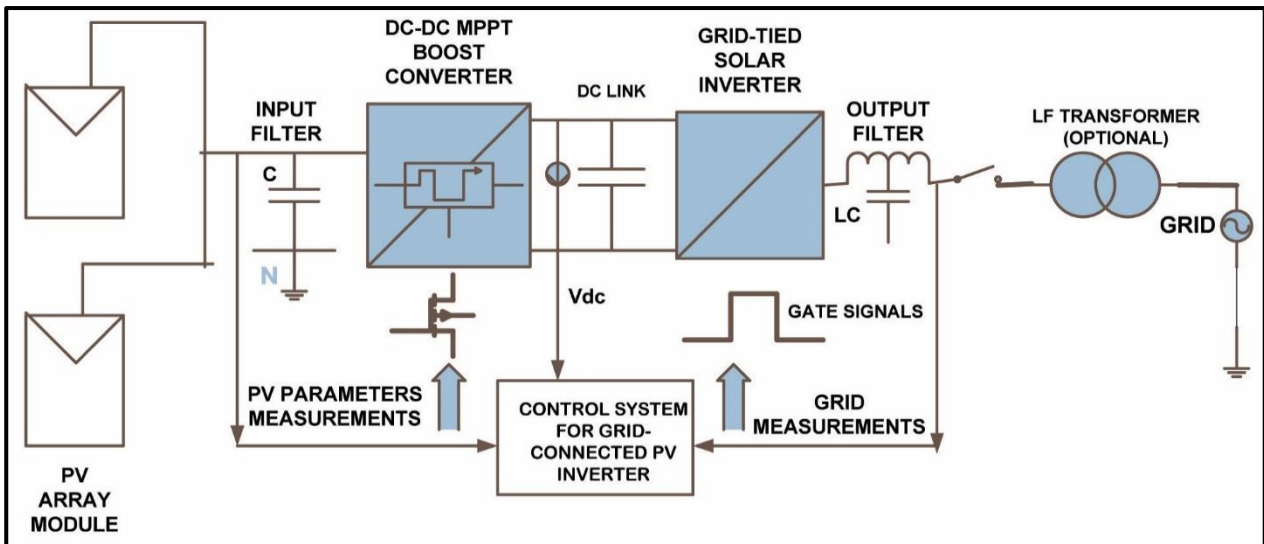


Figure 2: Circuit Layout



Figure 3: Completed PV Panel Mounting

Figure 4: Completed PV Panel Structures

Figure 5: PV Panel Inverters

1.7. NEED AND DESIRABILITY

The economic and social development goals of Namibia are embodied in (i) Vision 2030 and (ii) the National Development Plan 5 (NDP 5) 2017/2018 – 2021/2022 as well as NDPs 1, 2, 3, and 4. In addition, the Government has developed the Harambee Prosperity Plan (HPP) 2016/2017 – 2019/2020, which complements the Vision 2030 and NDP 5. All of the three plans set the goals, targets, and strategy for Namibia to move on a path to economic prosperity through a concerted strategy for the development of Namibia’s economic growth.

These Plans also include specific growth targets milestones and strategies for the sustainable deployment of Namibia’s resources to achieve the stated economic and social development goals.

The Government recognizes the importance of developing the country’s energy sector in order to fuel the targeted economic growth and the transformation of Namibia to an industrialized nation. Availability of reliable electricity service is central to the development of all sectors of the economy, as well as to achieve the country’s economic and social development goals. Namibia continues to face electricity shortages. The shortfall between peak demand and peak supply in Namibia continues to be supplemented by imports from the neighbouring countries in the Southern Africa Power Pool (SAPP) system. This represents an untenable dependence on imports that must be addressed in the near term in order to ensure Namibia’s energy supply security.

In this respect, Sino Energy saw it as a prerogative to take part in energy generation for the country to fuel sustainable development in Namibia. Not only electricity is important to the overall national grid, but there is remarkable need for rural electrification, even the OutjoTown council is set to benefit immensely from the project.

1.8. PROJECT ALTERNATIVES

1.8.1. SITE LOCATION ALTERNATIVES

An integrated site selection study was done in order to identify a suitable site for the proposed solar power plant. The proposed solar energy site is considered highly desirable due to the following considerations:

- Solar resource: Analysis of available data from existing weather stations suggests that the site has sufficient solar resource to make a solar energy facility viable (Figure 8).
- Site extent: Sufficient land was secured from the town council to enable sufficient power supply and to allow for a number of heliostats to make the project feasible.
- Land suitability:
 - Sites that facilitate easy construction conditions (relatively flat land with few rock outcrops or water-bodies) were favoured during site selection.
 - The site is locate in proximity to a sub-station.
 - Avoidance of obvious environmentally sensitive areas.

Consideration of the above criteria resulted in the selection of the preferred site. No further site location alternatives are considered in the EIA process.

1.8.2. SITE LAYOUT ALTERNATIVES

The PV layout and project component design underwent a number of iterations based on technical aspects and the environmental and social considerations assessed during the EIA process. From a layout perspective, the position of the proposed site infrastructure was determined by the consideration of the following aspects:

- Local topographical conditions.

1.8.3. TECHNOLOGY ALTERNATIVES

Two (2) Photovoltaic Power (PV) Systems technologies were considered for the proposed project. These are the most prominent technologies in use worldwide and described below;

Crystalline Technologies

By far, the most prevalent bulk material for solar cells is crystalline silicon (C-Si). Bulk silicon is separated into multiple categories according to crystallinity and crystal size in the resulting ingot, ribbon, or wafer.

Monocrystalline silicon (c-Si): often made using the Czochralski process. Single-crystal wafer cells tend to be expensive, and because they are cut from cylindrical ingots, do not completely cover a square solar cell module without a substantial waste of refined silicon. Hence most c-Si panels have uncovered gaps at the four corners of the cells.

Poly- or Multicrystalline silicon (poly-Si or mc-Si): made from cast square ingots large blocks of molten silicon carefully cooled and solidified. Poly-Si cells are less expensive to produce than single crystal silicon cells, but are less efficient.

Ribbon silicon is a type of multicrystalline silicon: it is formed by drawing flat thin films from molten silicon and results in a multicrystalline structure. These cells have lower efficiencies than poly-Si, but save on production costs due to a great reduction in silicon waste, as this approach does not require sawing from ingots.

Thin film Technologies

Thin-film technologies reduce the amount of material required in creating a solar cell. Though this reduces material cost, it also reduces energy conversion efficiency. Thin-film solar technologies have enjoyed large investment due to the success of First Solar and the promise of lower cost and flexibility compared to wafer silicon cells, but they have not become mainstream solar products due to their lower efficiency and corresponding larger area consumption per watt production. Cadmium telluride (CdTe), copper indium gallium selenide (CIGS) and amorphous silicon (A-Si) are three thin-film technologies often used as outdoor photovoltaic solar power production.

1.8.4. NO-GO ALTERNATIVE

The current low environmental impact associated with current land use will be maintained and no change in land use or zoning would be required. The status quo needs to be measured against the proposed facility to determine whether the environmental and socio-economic benefits warrant the approval thereof or whether the status quo should be maintained.

This development alternative entails that the proposed PV developments not be constructed on the project site, thus result in the site being left as is. With Namibia's new focus on renewable energy and the targets set the NO-GO option will result in a zero contribution to these targets and no alleviation with regards to the current demand pressures on electricity. The non-development of the proposed PV plant will furthermore impede economic development and socio-economic progress for Outjo Town.

Due to the numerous socio economic and economic benefits, the environmental advancement and the fact that the identified environmental impacts can be suitably mitigated it has been determined that the No Go option can be eliminated. Should the Competent Authorities (CA) refuse the authorisation of the proposed Solar Farm, the 'No Go' option will be "implemented" and the status quo of the site will remain intact - leaving the site in its present state.

1.8.5. CONCLUSION

The project will go ahead and will consider thin film technology because the technology reduce the amount of material required when creating a solar cell. Therefore, this reduces material cost. Other two options, crystalline technology and no-go alternative were discarded.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. INTRODUCTION

An important part of the EIA is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the construction and land servicing activities. This section looks at the legislative framework within which the proposed project will operate under. The focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislations, policies and international statutes applying to the project are highlighted in **Error! Reference source not found.** below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to this project

Table 1: Legal Compliance

LEGISLATION/POLICY/GUIDING DOCUMENT	PROVISION	PROJECT IMPLICATION
The Constitution of the Republic of Namibia (1990)	<p>The articles 91(c) and 95(i) commits the state to actively promote and sustain environmental welfare of the nation by formulating and institutionalizing policies to accomplish the sustainable objectives which include:</p> <ul style="list-style-type: none"> - Guarding against overutilization of biological natural resources, - Limiting over-exploitation of non-renewable resources, - Ensuring ecosystem functionality, - Maintain biological diversity. 	<p>-Through implementation of the environmental management plan the proposed development will be in conformant to the constitution in terms of environmental management and sustainability, through bringing development in an environmentally sensitive way.</p>

<p>Vision 2030 and National Development Plans</p>	<p>Namibia’s overall Development ambitions are articulated in the Nations Vision 2030. At the operational level, five-yearly national development plans (NDP’s) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. Currently the Government has so far launched a 4th NDP which pursues three overarching goals for the Namibian nation: high and sustained economic growth; increased income equality; and employment creation.</p>	<p>-The proposed energy generation project, is an important element in the industrialisation of the country as well as FDIs in Namibia.</p>
<p>Environmental Assessment Policy of Namibia 1994</p>	<p>The Environmental Assessment Policy of Namibia requires that all projects, policies, Programmes, and plans that have detrimental effect on the environment must be</p>	<p>-The construction and operation of the solar farm and transmission line will only commence after being awarded an environmental clearance certificate, thus by abiding to the requirements of</p>

	<p>accompanied by an EIA. The policy provides a definition to the term “Environment” broadly interpreted to include biophysical, social, economic, cultural, historical and political components and provides reference to the inclusion of alternatives in all projects, policies, programmes and plans.</p>	<p>the Environmental Assessment Policy of Namibia. The EIA and EMP will cater for the sustainable management of biophysical environment.</p>
<p>Environmental Management Act No. 07 of 2007</p>	<p>The Act aims at</p> <ul style="list-style-type: none"> - Promoting the sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment; - To provide for a process of assessment and control of projects which may have 	<p>-This document is compiled in a nature that project implementation is in line with the objectives of the EMA. EIA guiding procedures developed by MET were also used in the course of this project.</p>

	<p>significant effects on the environment;</p> <p>The Act gives legislative effect to the Environmental Impact Assessment Policy. Moreover, the act also provides procedure for adequate public participation during the environmental assessment process.</p>	
<p>Electricity Act 4 of 2007</p>	<p>Requires that any generation and or distribution complies with laws relating to health, safety and environmental standards (s 18(4)(b))</p> <p>In the event that exemption from acquiring a license is granted, the Minister may impose conditions relating to public health safety or the protection of the environment.</p>	<p>-Obliges Sino Energy to comply with all relevant provisions of the EMA and its regulations.</p>

<p>The Atomic Energy and Radiation Protection Act, Act 5 of 2005:</p>	<p>Provides for the adequate protection of the environment and of people against the harmful effects of radiation by controlling and regulating the production, processing, handling, use, holding, storage, transport and disposal of radiation sources and radioactive materials, and controlling and regulating prescribed non-ionising radiation sources according to the standards set out by the ICNIRP.</p>	<p>-Justifies the need for assessing the impact of electromagnetic radiation from the power line, on the nearby residents.</p>
<p>“Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300GHz)” (April 1998 developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP))</p>	<p>Provides international standards and guidelines for limiting the adverse effects of non-ionising radiation on human health and well-being, and, where appropriate, provides scientifically based advice on non-ionising radiation protection including</p>	<p>-Justifies the need for assessing the impact of electromagnetic radiation from the power line, on the nearby residents.</p>

	the provision of guidelines on limiting exposure.	
Public Health Act (No. 36 of 1919)	Under this act, in section 119: “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 project proponent will ensure that all legal requirements of the project in relation to protection of the health of their employees and surrounding residents is protected. -Personal protective equipment shall be provided for employees in construction. -The development shall follow requirements and specification in relation to water supply and sewerage handling so as not to threaten public health of future residents on this piece of land.
Soil Conservation Act 76 of 1969	The objectives of this Act are to: - Make provisions for the combating and prevention of soil erosion,	-The project will have a rather localized impact on soils and on the soil through clearance for PV panel stands and powerline poles. Soil protection measures will be employed and

	<ul style="list-style-type: none"> - Promote the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic. 	<p>preservation of trees as much as possible.</p>
<p>Nature Conservation Ordinance 1996</p>	<p>To consolidate and amend the laws relating to the conservation of nature; the establishment of game parks and nature reserves; the control of problem animals; and to provide for matters incidental thereto.</p>	<p>The proposed project implementation is not located in any known or demarcated conservation area, national park or unique environments. The project site was selected with this ordinance in mind to ensure that Namibian nature is conserved.</p>
<p>Protected Areas and Wildlife Management Bill</p>	<p>This bill, when it comes into force, will replace the Nature Conservation Ordinance 4 of 1975. The bill recognizes that biological diversity must be maintained, and where necessary, rehabilitated and that essential ecological processes and life support systems be maintained. It protects all indigenous species and</p>	<p>Environmental recommendations and considerations on this project has ensured that the proposed activities will not fall within the boundaries of any protected area and that the project will not affect heavily endangered vegetation and animals on its site.</p>

	control the exploitation of all plants and wildlife.	
Forest Act, 2001 (Act No. 12 of 2001)	The Act gives provision for the protection of various plant species through the Ministry of Agriculture, Water and Forestry (MAWF), Directorate of Forestry).	<ul style="list-style-type: none"> -Land clearing of an extensive piece of land will be done upon approval from the Directorate of Forestry. -The proponent will also have to ensure that there is no indiscriminate cutting down of trees during construction and operation -The proposed site is sparsely vegetated with white thorn tree species, which are not threatened or protected.
National Rangeland Policy and Strategy, 2012	The policy aims at enabling resource users (farmers and managers) to manage their rangeland resources in a sustainable manner and sustainable in that they are economically viable, socially acceptable, environmentally friendly and politically conducive.	-This proposed project will ensure that the local community benefits both economically and socially from the project, this in line with the recently declared Harambee Prosperity Plan and NDP 4&5.

<p>National Biodiversity Strategy and Action Plan (NBSAP2)</p>	<p>The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia putting together management of matters to do with ecosystems protection, biosafety, biosystematics protection on both terrestrial and aquatic systems.</p>	<p>-The project proponent has been advised by JBIC and recognises the need for ecosystems protection to manage the changing climatic environment.</p> <p>-This project is one of the drivers to reduce the rate of global environmental change given its contribution, to decreased use of burning fossil fuels for energy generation.</p>
<p>National Policy on Climate Change for Namibia, 2010</p>	<p>In harmony with the findings of the IPCC over time and the Earth Summits held annually, the policy seeks to outline a coherent, transparent and inclusive framework on climate risk management in accordance with Namibia’s national development agenda, legal framework, and in recognition of environmental constraints and</p>	<p>-Solar energy harnessing technologies are a positive impact to fighting climate change, thus this development is a positive step towards climate smart energy generation and environmental sustainability.</p>

	<p>vulnerability. Furthermore, the policy pursues the strengthening of national capacities to reduce climate change risk and build resilience for any climate change shocks.</p>	
<p>Wetland Policy, 2004</p>	<p>The policy provides a platform for the conservation and wise use of wetlands, thus promoting inter-generational equity regarding wetland resource utilization. Furthermore, it facilitates the Nation’s efforts to meet its commitments as a signatory to the International Convention on Wetlands (Ramsar) and other Multinational Environmental Agreements (MEA’s).</p>	<p>-In compliance to this Policy, the development will ensure a standard environmental planning such that it does not affect any wetlands within its locale through recognition of wetlands to promote the conservation and wise utilization of wetlands resources. -There are no existing wetlands/peatlands within 2km radius of the proposed project site.</p>
<p>Water Resources Management Act, 2013 (Act No. 11 of 2013)</p>	<p>This Act provides for the management, protection, development, use and conservation of water resources. This also forms</p>	<p>-Water supply will be obtained from a nearby borehole, the water abstraction license is valid.</p>

	the regulation and monitoring of water resources.	
National Heritage Act 27 of 2004	Heritage resources to be conserved in development.	-During the project implementation as soon as objects of cultural and heritage interests are observed such as graves, artefacts and any other object believed to be older than 50 years, all measures will be taken to protect these objects until the National Heritage Council of Namibia have been informed, and approval to proceed with the operations granted accordingly by the Council.
National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	“No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: (a) any meteorite or fossil; or	-The proposed site of development is not within any known monument site both movable or immovable as specified in the Act, however in such an instance that any material or sites or

	<p>(b) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by any people who inhabited or visited Namibia before the year 1900 AD; or</p> <p>(c) any implement, ornament or structure known or commonly believed to have been used as a mace, used or erected by people referred to in paragraph (b); or</p> <p>(d) the anthropological or archaeological contents of graves, caves, rock shelters, middens, shell mounds or other sites used by such people; or</p> <p>(e) any other archaeological or palaeontological finds, material or object; except under the authority of</p>	<p>archeologic importance are identified, it will be the responsibility of the developer to take the required route and notify the relevant commission.</p>
--	---	---

	<p>and in accordance with a permit issued under this section.</p>	
<p>Pollution Control and Waste Management Bill</p>	<p>-This bill has not come into force. Amongst others, 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>-To control air, water and land pollution as agitated by the Act the project proponent will ensure that erven will have approved drainage on site as well as standard conservancy tanks that do not threaten public health, adding on an integrated pollution management strategy following the EMP provided herein.</p>

<p>Convention on Biological Diversity (CBD)</p>	<p>Namibia is a signatory of the Convention on Biological Diversity and thus is obliged to conserve its biodiversity.</p>	<p>The project will preserve tree species on as part of their plans for greed and sustainable development.</p>
<p>United Nations Convention to combat Desertification</p>	<p>Namibia is bound to prevent excessive land degradation that may threaten livelihoods.</p>	<p>It will be the responsibility of the proponent to conserve vegetation on and around the area, to avoid encroachment of the desert environs in the area.</p>

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. SOCIO-ECONOMIC

The proposed project site is located on Farm Gerus about 34km east of Outjo Townlands, approximately. Outjo is a name derived from Otjiherero meaning small hills; the town consist of 8445 inhabitants (NSA 2013:39). Outjo town is located in the south east of Kunene region 70 km north-east of Otjiwarongo town and 100 km south of Etosha National Park. According to Dieckmann 2007b, Outjo was declared as a municipal town in 1944 and it's known to be the commercial center for the surrounding farms.

Majority of the Oujto population hails from the following ethnic groups: Herero, Damara>Nama, Afrikaner, Owambo, and German and not limited to this are the Hai||om. Dieckmann 2007b reported that the major economic activities sustaining the town and Outjo District at whole are livestock, tourism, charcoal production and farming.

3.2. CLIMATE

Classification of climate: The climate in Outjo is considered to be a local steppe climate and is classified as BSh by Köppen and Geiger.

Average rainfall: The average precipitation in Outjo is 394 mm.

Temperature: The average annual temperature is 21.4 °C.

The driest month is June, with 0 mm of rain. With an average of 105 mm whereas, the most precipitation is recorded in February. Moreover, January is the warmest month of the year with the average temperature of 24.8 °C.

3.3. FAUNA

3.3.1. MAMMALS

Of the 114 species of mammals expected to occur in the neighboring area. The most important species under Namibian legislation are those classified as rare and endangered species, such as black rhino, cheetah, and the lesser-known black-faced impala, which is endemic to north-western Namibia and south-western Angola. Moreover, other large mammal that occasionally occurs in the general area includes; elephant, giraffe, blue wildebeest, mountain and plains zebra, hyena and lion. Antelope species range from kudu, gemsbok and the large and stately eland, to the diminutive Damara dik-dik. Smaller mammals include jackal, bat-eared fox, honey badger, warthog and the ubiquitous ground squirrel. However, the project area has little to no mammals on site because it is a bare desert environment with no vegetation to provide food and habitat.

3.4. FLORA

3.4.1. TREES / SHRUBS, HERBS AND GRASSES

The vegetation in study area varies from dwarf shrub savannah and grasslands ecosystem. According to the study survey there is a low vegetation cover and large bare area, of which the trees and shrub species encountered are approximately >1m in height. In total there were approximately 5 families of tree/shrub species (Fabaceae, Tiliaceae, Combretaceae, Euphorbiaceae and Capparaceae) recorded of the following species: *Acacia mellifera*, *Acacia reficiens*, *Grewia flava*, *Grewia flavescens*, *Crton gratissimus* and *Boscia albitrunca* whereas, the area consisted died herbaceous plants except the *Indigofera auricoma* species. Furthermore, two grass species were recorded, *Stipagrostis uniplunis* and *Cenchrus ciliaris*. The low biodiversity on site can be associated to minimal rainfall experienced this year, changing of seasons (summer to winter) and low nutrient levels. It can be concluded that, the site consist of common species and all species recorded are not endemic or endangered in Namibia.



Figure 6: Land cover on locale.

(Currently the project area is semi-disturbed by farming activities on the farm as well as disturbance from construction activities of the sub-station adjacent to the project area. In this respect, there are several powerline connecting to the substation, as well as access roads to the site.)

3.5. GEOLOGY

Neoproterozoic succession in Outjo District is predominantly sedimentary sequence that was deposited in the frame of approximately 800-600 Ma ago and was deformed and suffered mild greenschist facies regional metamorphism. On very closer inspection there are very shallow soils over hard rock or highly calcareous material; also in surrounding area you find deeper soils that are extremely gravelly and/or stony) which can be further classified (e.g. as eutric, arenic, colluvic, calcic, dolomitic etc.).

3.6. 3.5 HYDROLOGY

There are currently three boreholes in proximity to the project area within the farm. The water is withdrawn from an average depth of over 100m and transferred through a rising a simple water pipeline system.

3.7. Avifauna

Literature on bird species illustrates that Namibia consist of 620 native bird species. Touristic highlights are scarce in the town of Outjo, hence the nearest documented place, the Etosha National Park inhabits 412 species of bird. Of the country's 13 endemic species, 8 have been reported from Etosha; Hartlaub's francolin, Rüppells korhaan, Rüppells parrot, Monteiro's hornbill, Carp's black tit, bare-cheeked babbler, rockrunner and the white-tailed shrike, are all reported as breeding in Etosha. All of Namibia's 40+ species of raptor, including all Namibian vultures and 12 eagles are in Etosha and the park is listed as an Important Bird Area. However, none of these birds are associated with portion of land allocated for the construction of the paper manufacturing plant and its surrounding environs

One of the most crucial aspects of this EIAR, is in relation to avifauna in the project environment because of the proposed transmission line. Power lines worldwide kill thousands of birds each year (Bevanger 1998, Lehman et al. 2007) either by electrocution or by direct collision.

However, given the amount of time that raptors spend chasing prey or displaying around such lines their mortality rates appear relatively low (or under-recorded) and one presumes some sort of learning and avoidance, at least of collision with the transmission lines, is evident. Direct observations of wild birds affecting lines are very rare.

3.8. Outjo Avifauna and Transmission Lines Risk:

Baseline data collected from Bird Information Systems layers, generated for Namibia by Environmental Information Systems revealed that the proposed transmission line has a low risk, because only 350m of the transmission line from the solar farm site has a very lower risk.

Table 2: Outjo Avifauna red species list

Alluded below, gives an overview of avian diversity in Northern Namibia. A baseline assessment conducted in Outjo did not identify any bird colonies and or nesting sites within the proposed project area. The area has evidence of small birds such as the Layard’s Tit-Babbler.

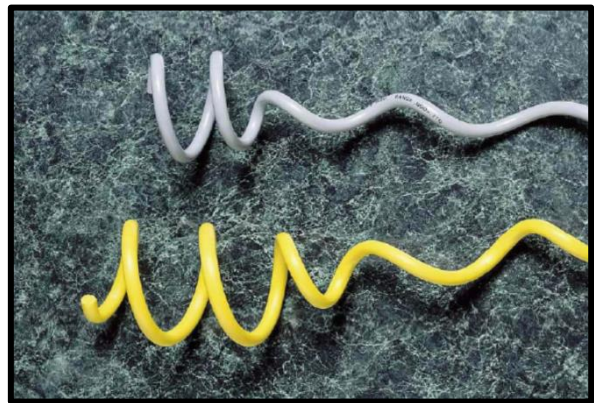
Table 3: Outjobird species sensitivity

Potential impacts:
Collision: Black Stork (E), European Roller (NT), Greater Flamingo (V), Kori Bustard (NT), Ludwig's Bustard (E), Martial Eagle (E), Secretarybird (V), Tawny Eagle (E)
Electrocution: Black Stork (E), Martial Eagle (E), Tawny Eagle (E)
Habitat damage: Kori Bustard (NT), Ludwig's Bustard (E), Martial Eagle (E), Secretarybird (V), Tawny Eagle (E)
Faults caused by nests: Cape Crow
Other non-Red listed species potentially affected by power lines
Raptors: African Hawk-Eagle, Barn Owl, Black-chested Snake-Eagle, Southern Pale Chanting Goshawk, Spotted Eagle-Owl
Wetland species: Abdim's Stork, African Spoonbill, Cape Teal, Cattle Egret, Egyptian Goose, Pied Avocet, Red-billed Teal, South African Shelduck, White-breasted Cormorant
Korhaans and bustards: Ruppell's Korhaan
Others: Struthio camelus)
Key: CE = Critically Endangered, E = Endangered; V = Vulnerable; NT = Near Threatened NB: Species highlighted in red are common in the Oshana Region area.

3.8.1. Bird Flight Diverters

Bird flight diverters (BFDs) have been used in Europe and the United States since the early 1970s (APLIC, 1994). BFDs are a preformed high impact plastic spiral, which wraps around the shield wire to make the wire more visible (Figure 13). BFDs increase the apparent shield wire diameter to 2.5 to 5.5 inches (6.4 to 13.9 cm) making the line more visible to birds. BFDs are normally installed at a 49 foot (15 m) spacing. Reductions in bird collisions of 65 to 74 percent have been experienced using BFDs. Bird diverters will be installed on the proposed transmission line.

Figure 7: Bird diverters for use on transmission lines, must be frequently replaced during the project operation phase.



4. CHAPER FOUR: PUBLIC CONSULTATION

4.1. OVERVIEW

The public consultation process forms an important component of the Environmental Assessment process. It is defined in the EIA Regulations (2012), as a “*process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters*” (S1). Section 21 of the Regulations details steps to be taken during a given public consultation process and these have been used in guiding our process.

Formal public involvement has taken place via public consultations and focal meetings, newspaper announcements to inform the public that such a large-scale project is under consideration. The public consultation process has been guided by the requirements of Environmental Management Act (EMA) No. 7 of 2007 and the process has been conducted in terms of regulation 7(1) as well as in terms of the EMA Regulations of GN 30 of 6 February 2012 and the World Bank EIA standards and project ToR.

Its overriding goals have been to ensure transparency in decision making and to.

- ✓ Ensure stakeholder concerns are incorporated in project design and planning;
- ✓ Increase public awareness and understanding of the project and
- ✓ Enhance positive development initiatives through the direct involvement of affected people.

The objectives of the public participation is to build credibility through instilling integrity and of conducting the EIA, Educate the stakeholders on the process to be undertaken and opportunities for their involvement and build stakeholders by establishing an agreed framework accordingly. This requires accessible, fair, transparent and constructive participation at every stage of process. Inform stakeholders on the proposed project and associate issues, impacts and mitigation and using the most effective manner to disseminate information.

In this section of the report, the results of consultations with various classes of stakeholders are summarized. The results of consultations with other stakeholders and community members who took part in this EIA are attached as Appendices.

The consultation was facilitated through the following means:

- ❖ A Background Information Document (BID) containing the project description, the EIA process and an invitation to participate was shared with stakeholders and community members.
- ❖ Invitation to participate notices were published in the local newspapers (New Era and Confidante) as shown in Table 7 below and Appendix A of this document.
- ❖ Announcement of EIA process verbally in the common public meeting points.
- ❖ Placement of a public notice at the project site and town centre.

Table 4: Details of public notification of the EIA study

Method	Area of Distribution	Language	Date Placed
The Confidante	Country Wide	English	15 April 2021
			16 April 2021
Windhoek Observer	Country Wide	English	15 April 2021
			16 April 2021
Site notices	Project site	English	26 April 2021 27 April 2021
	Town Council Notice Board	English	28 April 2021
Public Meeting	Nexus Head Office	English,	29 April 2021 11h00am



Figure 8: EIA Public meeting venue.

✓ *Key Stakeholder Engagement Meeting*

A public meeting was organised on Thursday 29 April 2021 at Nexus Head Office, Corner of Krenz Avenue and President Street, Otavi Road, Outjo. Proof of public consultation is given in Appendix A of this document as well the attendance register explaining the project and the EIA study. Given below are the details of the meeting which was held:

✓ *Identification of Interested and Affected Parties (I&APs)*

The EIA team identified and consulted the following I&APs & key stakeholders for the proposed project:

- ❖ Farmers
- ❖ NAMPOWER
- ❖ CENORED
- ❖ Community Members.

Other I&APs were allowed to register to the EIA team and compiled a database containing their names and correspondence details. The registration was accomplished over a period of 14 days.

✓ *Consultation with Stakeholders*

Experts in relevant fields, leaders of thought in environmental matters, Organs of the State (Nampower, Town Council) local communities have been consulted for their opinions on issues relating to the potential ecological and socio-economic impacts of the proposed project. This provided an opportunity for stakeholders and the public at large to engage in the process and to make comments or express their concerns regarding the proposed development.

Table 5: Key findings of the public consultation process:

SUMMARY OF ISSUES	
THEME	ISSUE
Economic	<ul style="list-style-type: none"> ✚ Employment of general labour must consider employing local people from Outjo. ✚ The company must take the social responsibility in Outjo

	<ul style="list-style-type: none"> ✚ Improve the life being of the local residents.
<p>Health and Safety</p>	<ul style="list-style-type: none"> ✚ Waste management concerns including both solid waste and wastewater. ✚ Potential air, noise and water pollution due to development. ✚ The company must provide enough health care to employees
<p>Ecological</p>	<ul style="list-style-type: none"> ✚ Concerns regarding impacts on and conservation of natural vegetation. ✚ Limited cutting down of trees should be observed by the construction company ✚ Resources such as air and water should not be polluted during operations because communities, wild animals and livestock rely on these resources.
<p>Communication</p>	<ul style="list-style-type: none"> ✚ Clear communication needs to be promoted between relevant authorities and the local community. ✚ Clarify nature of new property (how it works, what processes involved).

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. OVERVIEW

Sino Energy has committed to sustainability and environmental compliance through coming up with a corrective action plan for all anticipated environmental impacts associated with the project. This is also in line with the Namibian Environmental Management legislation and International best practices on energy generation, transmission and linear infrastructure. The proponent will implement an Environmental Management Plan (EMP) in order to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

5.2. ASSESSMENT OF IMPACTS

This section sets out the overall approach that was adopted to assess the potential environmental and social impacts associated with the project. To fully understand the significance of each of the potential impacts each impact must be evaluated and assessed. The definitions and explanations for each criterion are set out below in **Error! Reference source not found..**

Table 6: Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	

Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities
Probability	
Low	<25%
Medium	25-75%
High	>75%

(Adopted from ECC-Namiba, 2017)

Table 7: Impact Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non-reversible on a national scale and/or have international significance or result in a legislative non-compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

(Adopted from ECC-Namiba, 2017)

Table 8: Environmental Impacts and Aspects Assessment

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
TOPOGRAPHY	Landscape Scenery	Visual aesthetic impact	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor	PV Plant & Transmission line
SOIL	Soil	Contamination to soil from waste disposal	Construction and Operations	Moderate	Small	Local	Direct	Low <25%	Minor	PV Plant
	Soil	Spillages of fuel, oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor	PV Plant & Transmission line
	Soil	Erosion	Operations	Moderate	Small	Local	Direct	Low <25%	Minor	PV Plant & Transmission line
LAND CAPABILITY	Terrestrial ecology and aquatic ecosystems	Change in land use	Construction and Operations	Permanent	Great	Local	Direct	Low <25%	Moderate	PV Plant
	Carrying capacity	Increase in human activities in the environment	Construction and Operations	Moderate	Moderate	Regional	Direct	Medium 25 - 75%	Moderate	PV Plant & Transmission line
WATER	Surface water quality	Water pollution from oils and lubricants	Construction and Operations	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate	PV Plant and Transmission line

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
		from vehicles and machinery.								
	Surface water quality	Turbidity and high sediment load	Construction	Moderate	Small	Local	Direct	Low <25%	Moderate	PV Plant
	Soil, Vegetation, Infrastructure	Flooding	Construction & Operation	Permanent	Moderate	Local	Direct	Medium 25 - 75%	Moderate	PV Plant
AIR QUALITY	Air Quality	Construction phase dust	Construction	Short	Small	Local	Direct	Low <25%	Minor	PV Plant
WASTE	Groundwater quality	Hazardous waste such as waste oil and lubricants.	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	PV Plant
	Surface water quality	Threatened from plant stormwater discharge into the river.	Construction and operations	Moderate	Moderate	Regional	Direct	Medium 25 - 75%	Moderate	PV Plant
	Topography and Landscape	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	PV Plant and transmission line
FAUNA	Terrestrial ecology and biodiversity	Loss of habitat and driving away of local animals and aquatic animal species	Construction and Operations	Moderate	Moderate	Local	Direct	High >75%	Minor	PV Plant & Transmission line

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
	Avifauna	Bird electrocution, and physical crashes	Operations	Moderate	Small	Local	Direct	Low <25%	Minor	Transmission line
	Aquatic life	Antifouling paints	Operations	Moderate	Small	local	Direct	Low <25%	Minor	PV Plant
	Terrestrial ecology and biodiversity	Destruction of vertebrate fauna (e.g. road kills; fence and powerline mortalities)	Construction and Operations	Long	Moderate	Local	Direct	Low <25%	Minor	PV Plant & Transmission line
FLORA	Terrestrial ecology and biodiversity	Proliferation of invasive species inland	Construction and Operations	Long	Moderate	Local	Direct	High >75%	Moderate	PV Plant & Transmission line
	Terrestrial ecology and biodiversity	Illegal collection of firewood	Construction and Operations	Long	Moderate	Local	Direct	Low <25%	Minor	PV Plant & Transmission line
	Terrestrial ecology and biodiversity	Loss of unique flora and special habitats in the local environment because of general nuisance and animal migrate.	Construction and operations	None	Small	Local	Direct	Low <25%	Moderate	PV Plant & Transmission line

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
	Terrestrial ecology and biodiversity	Uncontrolled fires	Construction	Long	Great	Regional / National	Direct	Low <25%	Major	PV Plant & Transmission line
SOCIAL	Noise Pollution	Increased noise levels	Construction and operations	Moderate	Small	Local	Direct	Low <25%	Minor	PV Plant & Transmission line
	Socio Economic Activities	Temporary and permanent employment prospects.	Construction and operations	Long	Moderate	Regional	Direct	Medium 25 – 75%	Positive	PV Plant & Transmission line
	Socio Economic Activities	Climate change impacts	Operations	Long	Moderate	Regional / National	Direct	High >75%	Positive	PV Plant & Transmission line
	Contribution to National Economy	Employment, local procurement, duties and taxes.	Construction and Operations	Short	None	Regional / National	Direct	Low <25%	Positive	PV Plant & Transmission line
Heritage/Archaeology	Artefacts, archaeological high value components	Destruction or affecting paleontological and	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate	PV Plant & Transmission line

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
		archaeological artefacts								
HEALTH AND SAFETY	Health Sanitation	Poor ablution and waste management facilities may be detrimental to human health.	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate	PV Plant & Transmission line
	Property and human life	Electrocution, fires resulting in fatalities, damage to properties, veldt fires and power surges.	Construction and Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Major	PV Plant & Transmission line

References

- Enviro Dynamic.2014. Environmental Assessment Keetmanshoop Signal transmission, Namibia
- FAO, 1998. World reference base for soil resources. World Soil Resources Report, vol. 84. FAO, Rome.
- FAO, 1998.World reference base for soil resources.World Soil Resources Report, vol. 84. FAO, Rome.
- Government of Namibia. 2008, Government Gazette of the Republic of Namibia. Government notice No.1: Regulations for Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA)-Windhoek
- Government of Namibia.2008, Government Gazette of the Republic of Namibia. Government notice No.1: Regulations for Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA)-Windhoek
- IFC.2007. Stakeholder Engagement: A good practice handbook for companies doing business in emerging markets. IFC, Washington D.C
- IFC.2007. Stakeholder Engagement: A good practice handbook for companies doing business in emerging markets. IFC, Washington D.C
- Mendelsohn,J., el Obeid, S.2003.A digest of information on key aspects of Namibia's geography and sustainable development prospects. Research and Information Services of Namibia
- MET (Ministry of Environment and Tourism). 2012. *Environmental Management Act no. 7 of 2007*. Windhoek: Directorate of Environmental Affairs, Ministry of Environment and Tourism

Appendix A: Public Consultation Documents

1. Background Information Document
2. Newspaper Adverts
3. Site Notice
4. Meeting Attendance Register
5. Meeting Minutes
6. Questionnaires

Appendix B: Site Information

1. Land ownership
2. Locality Map

Appendix C: Consultancy Team resumes