ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A RENEWABLE SOLAR ENERGY FACILITY AND BATTERY ENERGY STORAGE SYSTEM IN THE ERONGO REGION

Background Information Document

ECT
ENVIRONAM CONSULTANTS TRADING

For

MBA Management Solutions

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1|PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to brief Interested & Affected Parties (I&AP's) and Stakeholders about the Environmental Impact Assessment (EIA) being undertaken for the Proposed Construction and Operation of a Renewable Solar Energy Facility and Battery Energy Storage System in the Erongo Region. The BID explains the environmental assessment process, it also provides an opportunity for I&APs to register for the EIA process and to submit any initial comments or issues regarding the proposed project from a social, economic and environmental perspective.

2|BACKGROUND INFORMATION

Namibia is regarded as a net exporter of electricity, local electricity generation is derived from hydropower, coal and diesel burning power stations; however, this is not enough to meet local demand necessitating the country to source the balance, amounting to more than 60%, from other countries within the Southern African region such as Zambia, South Africa, Zimbabwe and Mozambique; of which South Africa's contribution is dominant at 53%. Despite the current situation, the energy consumption in Namibia follows an upward trajectory because of the unavoidable dependency of national development on the availability, supply, demand and use of energy. Namibia will thus have to develop, as a matter of urgency, its own capacity to generate electricity.

Renewable energy sources offer numerous advantages over fossil fuels, including lower greenhouse gas emissions, improved air quality, and reduced dependence on finite resources. Solar energy, in particular, has experienced rapid growth due to falling costs and technological advancements in photovoltaic systems.

Despite these benefits, one of the main challenges of renewable energy sources is their intermittency and variability. Solar power generation is dependent on weather conditions, meaning that electricity production may not align with demand. This variability can strain the electricity grid and require backup power from fossil fuel plants, undermining the environmental benefits of renewable energy. Battery energy storage systems have emerged as a solution to this challenge, enabling the storage of excess energy generated during periods of high production for use when demand is high or production is low.

Battery energy storage systems offer several key benefits for the integration of renewable energy into the grid. They help smooth out fluctuations in energy generation, improve grid stability, and enhance the reliability of renewable energy sources. By storing excess energy when production exceeds demand and discharging stored energy when needed, battery storage systems can optimize the use of renewable energy and reduce the need for backup power from fossil fuel plants. This flexibility is essential for maximizing the value of renewable energy sources and accelerating the transition to a clean energy future.

MBA Management Solutions (the proponent) is focused on becoming a major player in the green renewable energy generation, production and trading space. They intend to generate renewable energy from solar incorporating battery energy storage syatems, in the Trekkopje area of the Erongo Region to be known as Gaingu Green Energy Industrial Park. The electricity generated will be fed to the national grid for consumption by the industrial loads and/or export to the neighbouring countries.

In terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), the following listed activities in **Table 1** were triggered by the proposed project:

Table 1: List of triggered activities

Activity Name and No(s):	Description of relevant Activity
Activity 1 (a) (Energy generation, transmission and storage activities)	The generation of electricity.
Activity 1 (b) (Energy generation, transmission and storage activities)	The transmission and supply of electricity.

The proponent commissioned this EIA and appointed Environam Consultants Trading (ECT) to undertake the necessary activities to enable an application for an Environmental Clearance Certificate with the Environmental Commissioner as prescribed by the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012). In line with Regulation 21(2) of the above-mentioned EIA Regulations, this BID is distributed to potential I&APs as part of the public consultation process for this EIA.

Environmental Assessments are used by planning and decision making authorities to obtain an objective view of the potential environmental and socio-economic impacts associated with the planning, construction and operation of the proposed development activities. This information must provide the relevant authorities with a sound basis for decision-making. The deliverables of this Environmental Assessment process are an Environmental Scoping Report, and an Environmental Management Plan which will, amongst other things:

- Identify the potential impacts of the proposed activities;
- Outline the public participation process undertaken, illustrate the issues, concerns and suggestions raised by Interested and Affected Parties;
- Outline the environmental management and mitigation measures that must be taken to avoid or reduce negative impacts and enhance positive impacts.

The above documents together with the application for an Environmental Clearance Certificate will be submitted to the Office of the Environmental Commissioner in Ministry of Environment, Forestry and Tourism (MEFT) for approval.

3|LOCALITY

The proposed development is located in the Erongo Region, ~ 30km North of Arandis mining town. The facility is situated on land that is under the administration of a communal conservancy called #Gaingu, and the Applicant will enter into a long-term lease agreement with the Conservancy for the duration of the operational period of the proposed development. It is situated on the coordinates lat: -22.11698; long:14.93886. See **Figures 1** below for the locality maps of the development site.

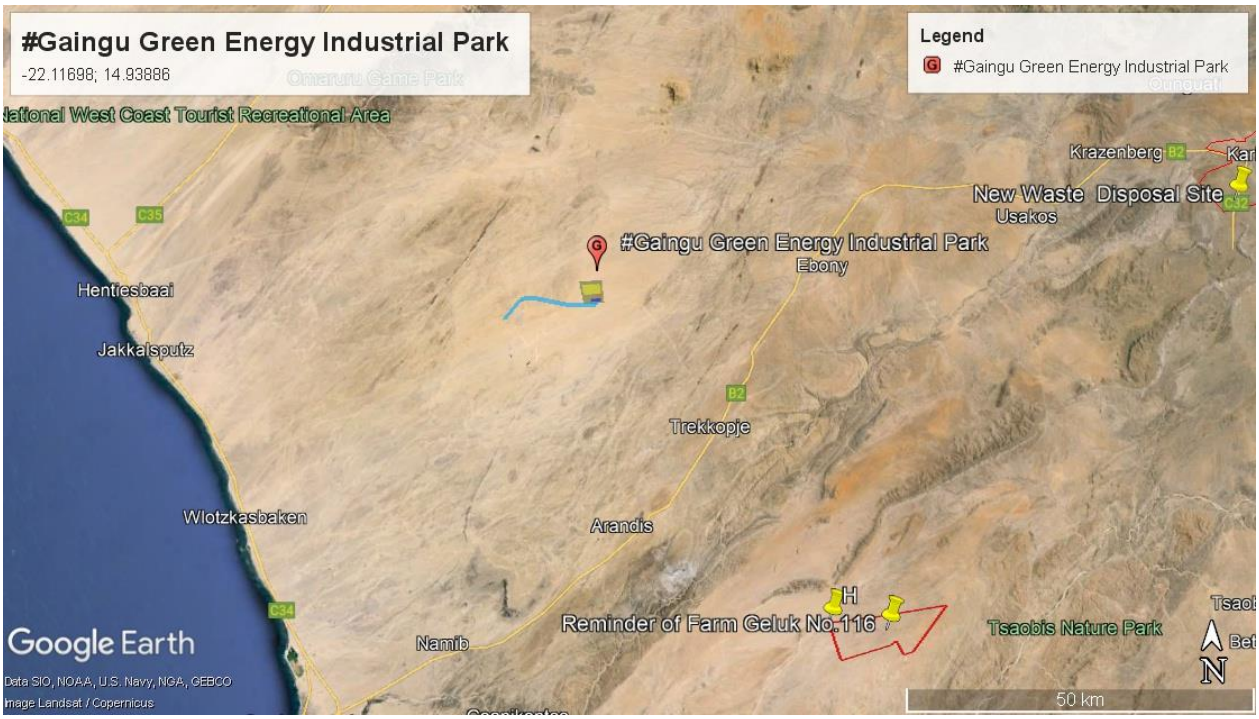

Figure 1: Locality map of the proposed development

4|TOPOGRAPHY, GEOLOGY AND HYDROGEOLOGY:

The Erongo Region, stretches from the Central Plateau westwards across the Central-Western Plains and Escarpment to the Central Namibian coast roughly over a distance between 200 and 350 km, and Northwards from the Ugab River in the north to the Kuiseb river in the south over a distance of up to 300 km, and covers an area of 63,586 km2, which is 7.7 per cent of Namibia's total area of about 823,680 km2. On the Western side it is flanked by the Atlantic Ocean. Erosion cutting eastwards into the higher ground led to the formation of the Central-Western Plains, leading to the formation of the catchment area of several major ephemeral rivers such as the Khan, Omaruru, Swakop and Ugab, the water of these rivers reach the sea when in full flood during a good rainy season (ERC, 2019).

The Southern boundary of the Kuiseb River distinctively divides the gravel plains to the North and the large sea of dunes to the South, however this river does not reach the sea during times of flood but the water instead disappears into the sand at the Kuiseb Delta, from which the town of Walvis Bay extracts underground water for its supplies.
In the Erongo Region, the land rises steadily from sea level to about 1,000 m across the breadth of the Namib. The Namib land surface is mostly flat to undulating gravel plains, punctuated with occasional ridges and isolated 'inselberg' hills and mountains. The eastern edge of the Namib is marked by the base of the escarpment in the southern part of the region. In the northern part, the escarpment is mostly absent and there is a gradual rise in altitude to over 1,500 m (SAIEA, 2011). The proposed site on which the development will be undertaken can be described as relatively flat.

The desert geology consists of sand seas near the coast, while further inland there is an occurrence of gravel plains and scattered mountain outcrops. Some of the highest sand dunes, up to around 300 m high, can be found here (ERC, 2016). Water for domestic and industrial use in Walvis Bay comes mainly from the Kuiseb aquifer in the lower Kuiseb River. These aquifers are recharged by runoff from the central highlands in central Namibia where rainfall is more reliable and more significant than at the coast (Nacoma, 2010).

5|PROJECT DESCRIPTION:

The key components of the proposed infrastructure are described below:

- Solar Photovoltaic ("PV") Module Array to produce up to 300MWp of installed capacity; the proposed facility will require numerous linked cells placed behind a protective glass sheet to form a module; and the modules will be mounted on Single Array Trackers, with backtracking. Multiple PV modules will be electrically connected together to form the Solar PV Arrays; the Energy Output from the PV arrays will be collected and delivered to the Inverter Stations; and from the Inverter Stations, the commercial energy will be collected by 33 kilovolts (kV) powerlines, and delivered to a Switching Station, where the voltage level will be stepped-up from 33kV (medium voltage level) to 220kV in order to connect the proposed facility to NamPower grid infrastructure via a 220kV overhead powerline.
- Battery Energy Storage System, which will make use of Lithium-Ion chemistries, the BESS containers will be centralised in one area.
- Temporary and Permanent Laydown Areas, Construction Compound (CC) Areas, and Access Roads. It is proposed that the temporary laydown area and the Construction Compound areas be used as the BESS footprint post-construction phase.
- See Table 2 below for the detailed description of the facility and Figure 3 for the schematic representation of the Solar Energy Facility and Battery Energy Storage System.

Table 2: Detailed Description of the Facility

Facility's Installed Capacity	up to 300 MWp
Facility's Footprint	up to 1 000 hectares
Technology	Solar Photovoltaic
PV Models Nominal Power	550 – 600Wp
PV Module Mounting Structure	include Trackers Single Array, with Backtracking
Number of Trackers	up to 900 units
Tracker Spacing	up to 7.00 metres
Number of PV Modules	up to 550 000 units
PV Modules Footprint	up to 650 hectares
Number of Inverter Stations	up to 300 units
Central Inverters Nominal Power	2.5 MWac
Medium Voltage	33kV
Length of MV Powerlines between Inverter Stations and Switching Station	up to 3 km
Switching Station Transformation	220/33kV
Installed Transformer	up to 350 MVA
Switching Station Footprint	up to 20 hectares, which will include an office building, a parking area, and a permanent laydown area
Earmarked Point of Connection ("PoC")	Loop-in Loop-out (LILO) on a 220kV Khan – Trekkopje 1 Line
Operation and Maintenance, and Auxiliary Building	up to 12 hectares
Construction Compound Area	up to 9 hectares, which will be converted to BESS Area post construction
BESS Technology	Lithium-Ion chemistries
BESS Capacity	up to 300MW
BESS Footprint	up to 9 hectares
Length of Internal Access Roads	up to 15km constructed at up to 15m wide (construction phase), rehabilitated to 8m wide (operational phase)

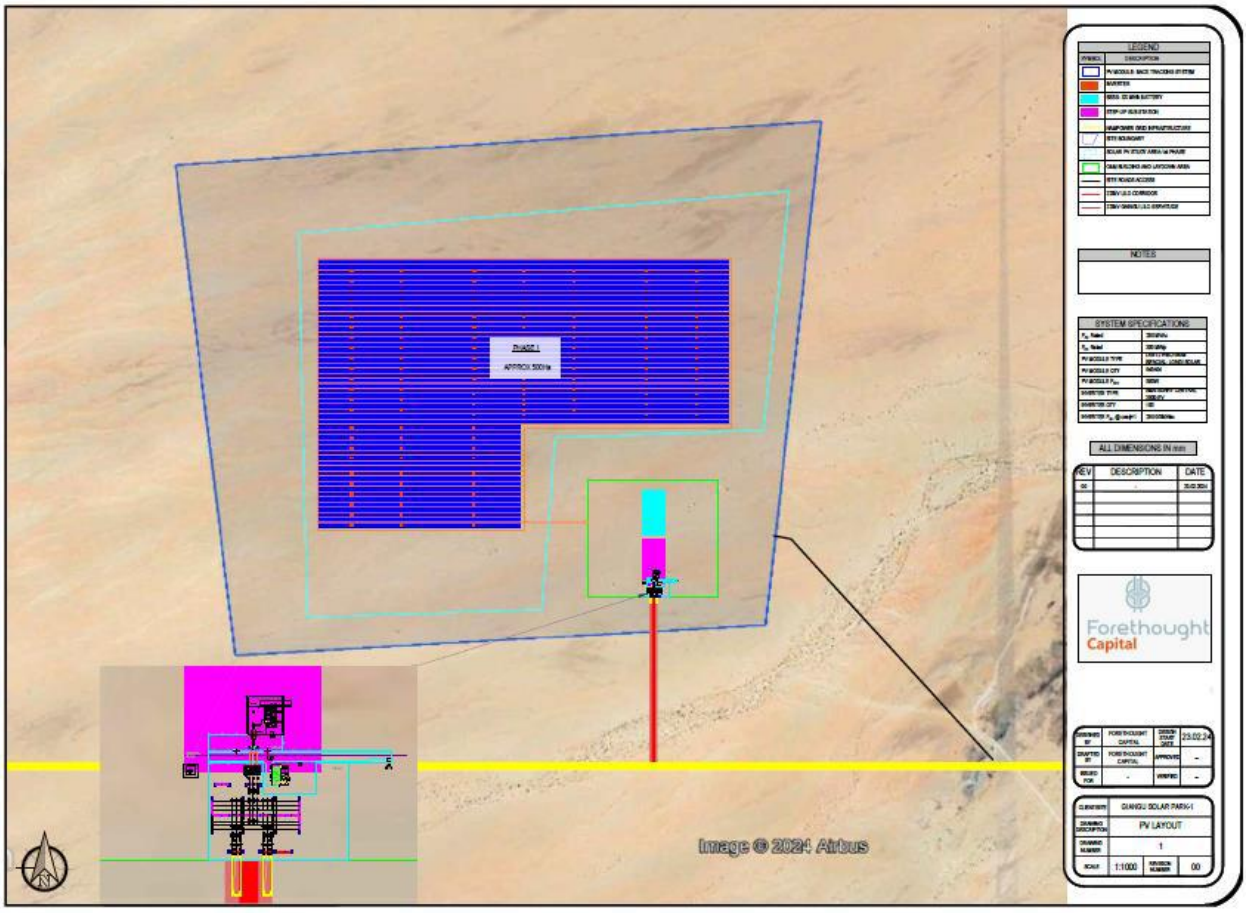

Figure 2: Solar Energy Facility and Battery Energy Storage System

6|PERSONNEL:

In total, approximately 12 employees will be engaged by the operation. During the construction phase about 25 people will be employed.

7|INFRASTRUCTURE:

As the facility will not be water intensive during operations, bulk water services could be extended from the existing Namwater pipeline found in the development area. Wastewater will be managed by means of a decentralized system such as trickling filter or septic tanks. Electricity will be provided to the site in consultation with the regional electricity distributor, ErongoRED.

8|ENVIRONMENTAL ASSESSMENT PROCESS:

- Establishing environmental risks of the intended project

- Establishing mitigation protocol
- Public and Stakeholder Consultation
- Preparing the draft Environmental Scoping Report (DESR) and Environmental Management Plan (EMP)
- Public reviewing of DESR and EMP
- Preparing the final ESR & EMP and submitting to MEFT
- Awaiting decision from Authorities
- Communicating decision to Interested & Affected Parties
- Availing opportunities to Appeal.

9|ENVIRONMENTAL IMPACTS:

Preliminary predictions of possible impacts that may occur and need to be managed as part of the Environmental Management Plan (EMP) include:

- Disturbance on biophysical environment (fauna and flora);
- Impact on ground water resources;
- Impact on soil;
- Impact on human health and well-being;
- Dust generation due to earth works, excavation and construction (construction vehicle movement etc);
- Noise generation during the construction phase (workers, vehicles, machinery, equipment);
- Improper waste and wastewater management during the construction phase;
- Increased traffic flows during the construction and operational phases of the project.

10|PUBLIC CONSULTATION:

The Environmental Impact Assessment process involves interaction with people who are interested in, or who could be affected by the proposed development and/or its construction and operational activities. Site notices, newspaper notices, and direct communication to Interested and Affected Parties will be among the media used to raise awareness of the project. Communication will also be sent out to various key ministries, agencies and organisations to obtain comments on the proposed developments.

Public participation process gives you the opportunity to:

Attend meetings and obtain information about the proposed project

Raise any environmental issues relating to the project

How can you be involved?

- By responding to the invitation advertised in the newspapers (Windhoek Observer and Namib Times)
- By registering as an I&AP, for your name to be added to our register list
- Submitting your comments or requests in writing

A Public consultation meeting will be held on **29 March 2024 at 11:00 am – 12:00 noon**. The venue of the meeting will be **Arandis Community Hall**.

We are inviting the public to participate by contributing issues and suggestions regarding the proposed project on or before **05 April 2024**. For further information, or concerns, I&APs can complete the register below:

11|REGISTRATION AND COMMENTS

Participant Name:	Organization/Affiliations:
Position:	Telephone:
Fax:	E-Mail:
Postal Address:	
Comments/Suggestions and Questions:	

Please complete the form and return document to be registered as an Interested & Affected Party (I&AP) to:

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