

JUNE 2015

BASIC ASSESSMENT PROCESS

PUBLIC PARTICIPATION PROCESS

THREE HARMONY PV SOLAR FACILITIES

FREE STATE PROVINCE



BACKGROUND INFORMATION DOCUMENT (BID)



BBEntropie (Pty) Ltd, an Independent Power Producer (IPP), proposes the establishment of three small-scale solar photovoltaic (PV) facilities and associated infrastructure on sites located within the boundary of properties owned by the Harmony Gold Mining Company Ltd near Odendaalsrus in the Free State Province. The three PV facilities are referred to as:

1. Harmony Tshepong PV Solar Facility
2. Harmony Eland PV Solar Facility
3. Harmony Nyala PV Solar Facility

Each facility will have a generating capacity of up to 10MW. The purpose of these projects is to generate electricity which will supply power to the substations on the Mine's property located at the Tshepong Shaft, the Nyala Shaft and the Eland Shaft. The nature and extent of the proposed projects is explored in more detail in this Background Information Document (BID).

AIM OF THIS BACKGROUND INFORMATION DOCUMENT

This document aims to provide you, as an interested and/or affected party (I&AP), with:

- » An overview of the three proposed Harmony Solar Facilities.
- » An overview of the Basic Assessment process and studies being undertaken to assess the potential impacts, positive and negative, associated with the proposed facility.
- » Details of how you can become involved in the process, receive information, or raise issues, which may concern and/or interest you.

OVERVIEW OF THE PROPOSED PROJECT

The purpose of the proposed project is to generate electricity for exclusive use by the Harmony Gold Mining Company Ltd. BBEntropie (Pty) Ltd propose to develop and operate the PV plants for Harmony Gold. The facilities will supply power to the substations on the Mine's property located at the Tshepong Shaft, the Nyala Shaft and the Eland Shaft. The construction of the PV facilities aim to reduce the Harmony Gold Mining Company's dependency on direct supply from Eskom's National grid for operation activities, while simultaneously decreasing their carbon footprint.

Three sites located within the boundary of Harmony Gold Mining Company's property have been identified for the construction of the PV facilities. Although all of the sites identified for the proposed PV facilities are located within a mine boundary and have been historically disturbed, no active mining activity has taken place on these sites. Table 1 below provides details on the farm portions identified for the development of each PV facility; the grid connection options being considered for each PV facility; and the extent of the development footprint proposed for each PV facility.

Table 1: Harmony PV Facilities – Project Specific Details

Project Name	Affected Farm Portions	Grid Connection
Harmony Tshepong PV Solar Facility	» Farm Free State Geduld 448	Anglo Geduld Substation
Harmony Eland PV Solar Facility	» Farm Rietpan RE/17 » Farm Tochgekregen RE/99 » Farm Wesselia 101	Blinkpoort Shaft Substation
Harmony Nyala PV Solar Facility	» Farm Rietpan RE/17 » Farm Rheederpark 443	Freguls Five Substation

The proposed sites are located within the Matjhabeng Local Municipality and Lejweleputswa District Municipality.

PROJECT COMPONENTS

Each PV facility will include the following infrastructure:

- » Photovoltaic (PV) panels of between up to 4m in height with a contracted capacity of up to 10MW.
- » Mounting structures to be either rammed steel piles or piles with pre-manufactured concrete footing to support the PV panels.
- » Cabling between the project components, to be lain in trenches ~ 1-2m deep.
- » Power inverters between the PV arrays.
- » Transformers and a mini-substation.
- » An overhead power line for the distribution of the generated power which will be connected to the relevant substation for each site.
- » A main external access road that leads to the development site and minor internal roads between the PV arrays.
- » Office, workshop area for maintenance and storage.
- » A water pipeline to transport water from the mine's existing water network to the PV facility.
- » Lighting and fencing will be available in and around the facility for security and visibility purposes.
- » During construction (temporary infrastructure) such as laydown areas will also be required.

The overall aim of the design and layout of the facility is to maximise electricity production through exposure to the solar radiation, while minimising infrastructure, operation and maintenance costs, and social and environmental impacts.

PHOTOVOLTAIC TECHNOLOGY

The use of solar energy for power generation can be described as a non-consumptive use of natural resources which emits zero greenhouse gas emissions. The generation of renewable energy will contribute to South Africa's electricity generating market.

A solar energy facility uses the energy from the sun to generate electricity through a process known as the **Photovoltaic Effect**. This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity.

The Solar Energy Facility will comprise of the following components:

The **Photovoltaic Cell**

A photovoltaic (PV) cell can consist of a thin film technology or polycrystalline silicone cell which acts as a semiconductor used to produce the photovoltaic effect. Individual PV cells are linked and placed behind a protective glass sheet to form a photovoltaic panel.

The **Inverter**

The photovoltaic effect produces electricity in direct current. Therefore an inverter must be used to change it to alternating current.

The **Support Structure**

The PV panels will be attached to a steel **support structure**, set at an angle so to receive the maximum amount of solar radiation. The angle of the panel is dependent on the latitude of the proposed facility and the angles may be adjusted to optimise for summer or winter solar radiation characteristics.

The PV panels are designed to operate continuously for more than 20 years, unattended and with low maintenance.



Figure 1: Illustration of PV panels (courtesy of BBEntropie (Pty) Ltd)

THE NEED FOR A BASIC ASSESSMENT

In terms of the EIA Regulations of December 2014 (Government Notice 983 – 986 published in terms of the National Environmental Management Act (NEMA; No. 107 1998)), the construction of the proposed facility is a listed activity requiring environmental authorisation. As the projects comprise of electricity generation facilities with a generating capacity of less than 10MW, and which occupies an area in excess 1ha each, the undertaking of a **Basic Assessment process** is required. This process involves the identification and assessment of environmental impacts through specialist studies, as well as public participation.

An environmental impact assessment is an effective planning and decision-making tool. It allows the potential environmental consequences resulting from the establishment and operation of a proposed development to be identified and appropriately managed. It provides the opportunity for the developer to be fore-warned of potential environmental issues, and allows for resolution of the issue(s) reported on as well as dialogue with affected parties.

In support of an application for environmental authorisation for the project, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations of December 2014. BBEntropie has appointed **Savannah Environmental (Pty) Ltd**, as the independent environmental consultant, to undertake the required environmental assessments to identify and assess the potential environmental impacts associated with the proposed projects, and propose appropriate mitigation and management measures in a Basic Assessment Report. Three separate applications for environmental authorisation have been submitted to the National Department of Environmental Affairs (DEA) as the competent authority, and a separate Basic Assessment is being undertaken for each PV facility. As part of the environmental assessment process, I&APs will be actively involved through the public involvement process.

POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PV FACILITIES

Potential positive and negative environmental impacts associated with the development of solar energy facilities are expected. These include:

- » Impacts on ecology: construction of the facilities can cause disturbance to vegetation, habitats and ecological processes.
- » Impacts on heritage resources: potential disturbance or destruction of heritage sites may occur during the construction of the facilities.

PUBLIC INVOLVEMENT PROCESS

The sharing of information forms the basis of the public involvement process and offers you the opportunity to become actively involved in the Basic Assessment process from the outset. Comments and inputs from I&APs during the Basic Assessment process are encouraged in order to ensure that potential impacts are considered within the ambit of the study.

The public involvement process aims to ensure that:

- » Information that contains all the relevant facts in respect of the application is made available to I&APs for review.
- » I&AP participation is facilitated in such a manner that they are provided with a reasonable opportunity to comment on the proposed project.
- » Adequate review periods are provided for I&APs to comment on the findings of draft reports.

On-going communication with registered parties will ensure that you will be kept informed of the progress of the BA process and be advised when documentation is available for review and comment.

YOUR RESPONSIBILITIES AS AN I&AP

In terms of the EIA Regulations, your attention is drawn to your responsibilities as an I&AP:

- » In order to participate in this Basic Assessment process, you must register yourself on the project database.
- » You must ensure that any comments regarding the proposed project are submitted within the stipulated timeframes.
- » You are required to disclose any direct business, financial, personal or other interest which you may have in the approval or refusal of the application for the proposed facilities.

HOW TO BECOME INVOLVED

1. By responding (by phone, fax or e-mail) to our invitation for your involvement which has been advertised in local and regional newspapers and on site notices.
2. By returning the attached Reply Form to the relevant contact person.
3. By contacting the consultants with queries or comments.
4. By reviewing and commenting on the draft reports within the stipulated 30-day public review periods.

If you consider yourself an I&AP for the proposed project, we urge you to make use of the opportunities created by the public involvement process to provide comment, or raise those issues and concerns which affect and/or interest you, and about which you would like more information. Your input into these processes forms a key element of the Basic Assessment process.

By completing and submitting the accompanying reply form, you automatically register yourself as an I&AP for the projects, and are ensured that your comments, concerns or queries raised regarding the projects will be noted.

COMMENTS AND QUERIES

Direct all comments, queries or responses to:

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To view project documentation, visit
www.savannahSA.com

HARMONY PV SOLAR FACILITIES

Locality Map

Legend

- Eskom substation
- Eskom power line
- Main road
- Regional road
- - - Railway Line
- Farm Portions
- Non-Perennial river

Tshepong Facility Layouts

- Preferred
- Alternative

Nyala Facility Site Layouts

- Preferred
- Alternative

Eland Facility Site Layouts

- Preferred
- Alternative

