

## BASIC ASSESSMENT PROCESS

# PROPOSED MACHADODORP PHOTOVOLTAIC (PV) SOLAR ENERGY FACILITY, MPUMALANGA PROVINCE DEA REF NO.: 14/12/16/3/3/1/738

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## BACKGROUND INFORMATION DOCUMENT

November 2012

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Solar To Benefit Africa (Pty) Ltd is proposing to establish a commercial photovoltaic solar energy facility as well as associated infrastructure on a site located approximately 4 km north-east of Machadodorp next to the N4 route in the Mpumalanga Province. Based on a pre-feasibility analysis and site identification process undertaken by Solar To Benefit Africa (Pty) Ltd, a technically feasible area has been identified for consideration and evaluation through a basic assessment process. The proposed solar power plant will include photovoltaic (PV) solar panels and associated infrastructure with a total generating capacity of ~ 10MW. The project will be known as the **Machadodorp PV 1 Solar Energy Facility**.

The purpose of the proposed PV facility will be to evacuate the generated power into the Eskom electricity grid (via the Machadodorp Substation). Solar To Benefit Africa will be required to apply for a generation license from the National Energy Regulator of South Africa (NERSA), as well as a power purchase agreement from Eskom (i.e. typically for a period of 20 - 25 years) in order to build and operate the proposed facility. As part of the agreement, Solar To Benefit Africa will be remunerated per kiloWatt hour generated by Eskom who will be financially backed by government. Depending on the economic conditions following the lapse of this period, the facility can either be decommissioned or the power purchase agreement may be renegotiated and extended.

The project is proposed on Portion 8 of the farm De Kroon 363 JT next to the N4 route. This property falls within the Emakazheni Local Municipality of the Mpumalanga Province. A broader area of approximately 100 ha is being considered within which the facility is to be constructed, although an area of less than 20ha would be required for the development footprint. The nature and extent of this facility is explored in more detail in this Background Information Document (BID).

### AIM OF THIS BACKGROUND INFORMATION DOCUMENT

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

- » An overview of the proposed PV Solar Energy Facility proposed as part of the Machadodorp PV Solar Facility.
- » An overview of the Basic Assessment process and studies being undertaken to assess the potential impacts, both 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.

## PROJECT COMPONENTS

By undertaking a technical feasibility study which considered favourable **climatic conditions** (solar renewable energy facilities are directly reliant on average solar radiation values for a particular area), **access and capacity of the electricity grid**, **accessibility** of the study site, and local site **topography**, a technically feasible site has been identified by the project proponent for the establishment of the Solar Power Plant.

The Solar Power Plant is proposed to accommodate the following infrastructure:

- » Photovoltaic (PV) Panel with an installed capacity of up to **10MW**.
- » A on-site substation and overhead power line/s connecting to existing the Machadodorp Substation;
- » Mounting structures (either rammed steel piles or piles with pre-manufactured concrete footings to support the PV panels);
- » Cabling between the project components, to be laid underground where practical;
- » Internal access roads; fencing and
- » Workshop area for maintenance, storage and offices.

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**. 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.

## RENEWABLE ENERGY TECHNOLOGY PROPOSED

A PV Solar Power Plant 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 Power Plant will comprise of the following components:

### The **Photovoltaic Cell**

A photovoltaic (PV) cell can consist of a thin film technology or polycrystalline silicon 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.



Illustration of PV panels

## THE NEED FOR A BASIC ASSESSMENT

In terms of the EIA Regulations of June 2010 (Government Notice 544 – 546 published in terms of the National Environmental Management Act (NEMA; No. 107 1998), the construction of the proposed facilities is a listed activity requiring environmental authorisation. As the project comprises a power generation facility with a generating capacity of 20MW or less, and which occupies an area of less than 20ha, 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.

A Basic Assessment is an effective planning and decision-making tool. It allows the potential environmental consequences resulting from a technical facility during its establishment and its operation 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 in the as well as dialogue with affected parties.

In order to obtain authorisation for the project, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations of June 2010. Solar To Benefit Africa has appointed **Savannah Environmental**, as the independent environmental consultant, to undertake the required environmental assessments to identify and assess all the potential environmental impacts associated with the proposed projects, and proposes appropriate mitigation and management measures in an Environmental Management Programme. As part of these environmental studies, I&APs will be actively involved through the public involvement process also being undertaken by Savannah Environmental.

## WHAT ARE THE POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECTS?

A number of potential environmental impacts, positive and negative, associated with the Solar Power Plant are expected. These include the following:

## Biophysical Studies

**Impacts on ecology, fauna and flora:** the construction of the facility and the associated disturbance of vegetation may result in impacts on ecology.

**Impacts on agricultural potential:** Impacts on agricultural areas and potential, and land capability.

## Social Studies

**Visual quality and aesthetics:** the solar energy facility have the potential to have a visual impact on the surrounding area.

**Impacts on heritage sites and fossils/palaeontology:** disturbance to or destruction of heritage sites and fossils/palaeontology may result during the construction of the facility.

**Impacts on the social environment:** the construction and operation of the facility may result in limited job opportunities and could impact on local land use.

Assessment of these impacts will be guided by existing information, field observations and input from the public participation process. As an I&AP, your input is considered an important part of this process, and we urge you to become involved.

### 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 EIA process from the outset. Comments and inputs from I&APs during the EIA 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, informed of details of public consultation meetings which are planned, 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 EIA 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.
2. By returning the attached Reply Form to the relevant contact person.
3. By attending the meetings to be held during the course of the project. As a registered I&AP you will automatically be invited to attend these meetings. Dates for public meetings will also be advertised in local newspapers.
4. By contacting the consultants with queries or comments.
5. 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 EIA process.

By completing and submitting the accompanying reply form, you automatically register yourself as an I&AP for the two 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:

### **Gabriele Wood of Savannah Environmental (Pty) Ltd**

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To view project documentation, visit [www.savannahSA.com](http://www.savannahSA.com)

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