

JUNE 2013

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED

**WATERSHED SOLAR ENERGY FACILITIES**

**NEAR LICHTENBURG**

**NORTH WEST PROVINCE**

BACKGROUND INFORMATION DOCUMENT



FRV Energy South Africa (Pty) Ltd is proposing to establish a commercial photovoltaic solar energy facilities with a total export capacity of up to 150MW (two phases of 75MW each), as well as associated infrastructure on a site located approximately 6 km north-west of Lichtenburg, North West Province. The following project names apply:

- » Watershed Phase I Solar Energy Facility
- » Watershed Phase II Solar Energy Facility

Based on a pre-feasibility analysis, site identification and environmental screening process undertaken by FRV Energy South Africa (Pty) Ltd, a favourable area has been identified for consideration and evaluation through an Environmental Impact Assessment (EIA).

The purpose of the proposed solar energy facilities will be to evacuate the generated power into the Eskom electricity grid. The project is proposed to be part of the Department of Energy's (DoE) Renewable Energy Independent Power Producer Programme (REIPPP) and is expected to be bid in August 2014. Should the project be selected by the DoE for implementation, FRV Energy South Africa (Pty) Ltd 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, FRV Energy South Africa (Pty) Ltd will be remunerated by Eskom per kilowatt hour generated. Eskom 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 Watershed Solar Energy Facilities are proposed to be located on portion 1, 9 and 10 of the farm Houthaalbomen 31 located about 6 km north-west of Lichtenburg within the Ditsobotla Local Municipality of the North West Province. 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 Solar Energy Facilities.
- » An overview of the Environmental Impact Assessment process and studies being undertaken to assess the potential impacts, both positive and negative, associated with the proposed project.
- » 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

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 to the electricity grid, accessibility of the study site, local site topography, and environmental constraints, a potentially suitable site has been identified by FRV Energy South Africa (Pty) Ltd for the establishment of the proposed solar energy facilities. The solar energy facilities are proposed to accommodate an array of photovoltaic (PV) panels with an export capacity of up to 75 MW each. It is proposed to make use of either static or tracking solar

panel technology for this facility. Other infrastructure associated with the facility will include:

- » Mounting structures for the solar panels to be either rammed steel piles or piles with pre-manufactured concrete footings to support the PV panels.
- » Cabling between project components, to be laid underground where practical.
- » A new on-site substation to evacuate the power from the facility into the Eskom grid
- » A new overhead power line looping in and out of an existing Eskom power line that runs from the Watershed Substation east of the R505, approximately parallel to the southern periphery of the selected property.
- » Internal access roads and fencing.
- » 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 contributes to South Africa's electricity generating market which has historically been dominated by coal-based power generation.

## RENEWABLE ENERGY TECHNOLOGY PROPOSED FOR THE PROJECT

Solar energy facilities, such as those using PV panels use 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 Facilities will comprise of the following components:

### The Photovoltaic Cell

Individual PV cells (static or tracking) are linked and placed behind a protective glass sheet to form a photovoltaic panel. Other technologies that can be used include thin film and concentrated solar PV (CPV).

### 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 support structure approximately 4 meters off the ground set at an angle so to receive the maximum amount of solar radiation (fixed technology), or set to track the sun (tracking technology) in order to increase the amount of energy produced. 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 a photovoltaic solar facility (<http://www.frv.com/multimedia-files/>)



Figure 2: Picture of a PV Panel (<http://www.frv.com/multimedia-files/>)

## ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), FRV Energy South Africa (Pty) Ltd requires authorisation from the National Department of Environmental Affairs (DEA), as the competent authority (in consultation with the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)) for the construction and operation of the proposed solar energy facilities. In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of GN R543 (Regulations 26-35) and R545, a Scoping and EIA are required to be undertaken for this proposed project. In order to obtain authorisation, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations. The individual projects have been registered with the National Department of Environmental Affairs under Application Reference Numbers:

- » Watershed Phase I Solar Energy Facility- 14/12/16/3/3/2/556

As the projects are proposed on the same property and form part of a larger development, a single EIA process will be undertaken to consider both projects.

An EIA 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 applicant to be forewarned of potential environmental issues, and allows for resolution of the issue(s) reported on in the EIA report as well as dialogue with I&APs.

FRV Energy South Africa (Pty) Ltd has appointed Savannah Environmental, as the independent environmental consultant, to undertake the required Scoping Phase and Environmental Impact Assessment to identify and assess all the potential environmental impacts associated with the proposed project, and to propose appropriate mitigation and management measures in an Environmental Management Programme (EMPr). 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 PROJECT?

A number of potential environmental impacts, both positive and negative, associated with the proposed Solar Energy Facilities have been identified. These include the following:

### Biophysical Studies

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

Impacts on agricultural potential: Impacts on agricultural areas and potential, and land capacity.

### Social Studies

Visual quality and aesthetics: The solar energy facilities has the potential to have a visual impact on the surrounding area.

Impacts on heritage sites and fossils/paleontology: Disturbance to or destruction of heritage sites and fossils/paleontology may result during the construction of the facility.

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

Specialist studies will be undertaken to identify and assess these potential impacts and will be undertaken in two phases:

1. The Scoping Phase/Study consists of a desktop study wherein potential issues associated with the proposed project are identified and evaluated, and those issues requiring further investigation through the EIA phase are highlighted.
2. The EIA phase involves the detailed assessment of potentially significant impacts identified in the Scoping Phase. Practical and achievable mitigation and management measures will be recommended within the draft Environmental Management Plan (EMP).

The potential environmental impacts associated with not undertaking the proposed project will also be explored through the EIA process. Specialist studies 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.

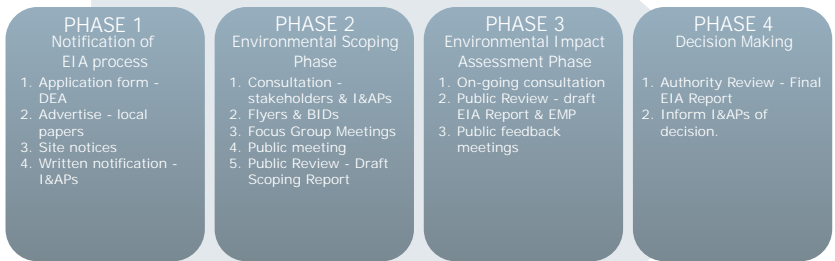
## PUBLIC INVOLVEMENT PROCESS

The sharing of information forms the basis of the public involvement process and offers you the opportunity to become actively involved in the EIA 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 the draft Scoping and EIA Reports.

In order to ensure effective participation, the public involvement process includes the following 4 phases:



## 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 that you may have in the approval or refusal of the application for the proposed facility.

## 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 national 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 and regional newspapers.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the draft Scoping and EIA Reports within the stipulated 30-day public review periods.

If you consider yourself an I&AP for this 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 this process 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 this project, and are ensured that your comments, concerns or queries raised regarding the project 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](http://www.savannahSA.com)

# Watershed Solar Energy Facility

## Locality Map

- Legend**
-  National Road
  -  Regional Road
  -  Secondary Road
  -  Railway Line
  -  Perennial River
  -  Non-perennial River
  -  Power Line
  -  Distribution Substation
  -  Transmission Substation
- Layout**
-  SEF farm portion
  -  Project boundary

