

MARCH 2013

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED
SIRIUS SOLAR PV PROJECTS
NEAR UPINGTON
NORTHERN CAPE PROVINCE

BACKGROUND INFORMATION DOCUMENT



APS Invest One (a subsidiary of Aurora Power Solutions) is proposing to establish two commercial photovoltaic solar energy facilities on a site approximately 20 km south-west of Upington, Northern Cape Province. The following project names apply:

- » Sirius One Solar PV Project
- » Sirius Two Solar PV Project

Based on pre-feasibility analysis and site identification processes undertaken by APS Invest One, a favourable site for development of the two projects has been identified for consideration and evaluation through an environmental impact assessment process.

The purpose of the proposed PV facilities will be to evacuate the generated power into the Eskom electricity grid. APS Invest One 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 each of the proposed facilities. As part of the agreement, APS Invest One 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.

In terms of the Department of Energy's (DoE) competitive bidding process for procuring renewable energy from Independent Power Producers in South Africa a threshold has been set for the maximum amount of megawatts per project entered into the bid. The export threshold for a single solar PV facility for submission into a bid has been set at 75 MW. Therefore each project will have an electricity generation capacity of up to 75MW, in line with the DoE requirements.

The Sirius One and Sirius Two Solar PV Projects will be located on different areas within the Remaining Extent of the Farm 638 Tungsten Lodge (total extent of 500 ha). This property falls within the Kai !Garib Local Municipality, Northern Cape. 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 Sirius (One & Two) Solar PV Projects
- » An overview of the Environmental Impact Assessment processes 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

Through 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 potentially feasible site has been identified by APS Invest One for the establishment of the two proposed PV facilities.

Each 75MW facility would include the following infrastructure:

- » An array of photovoltaic (PV) panels.
- » Mounting structure to support the PV panels.
- » Cabling between the projects components, to be laid underground where practical.
- » A 132 kV power line.
- » A new on-site substation to evacuate power to a proposed Eskom Substation which is proposed to be located in the vicinity of the site.
- » Internal access roads and fencing.
- » Workshop area for maintenance, storage, and offices.

The overall aim of the design and layout of the facilities will be to maximise electricity production through exposure to the solar radiation, while minimising infrastructure, operation and maintenance costs, as well as 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 been dominated by coal-based power generation.

RENEWABLE ENERGY TECHNOLOGY PROPOSED

Various renewable/ solar energy technologies are available for electricity generation. Renewable energy technologies offer an alternative to fossil fuels, thereby reducing the amount of CO₂ emissions into the atmosphere.

PHOTOVOLTAIC (PV) TECHNOLOGY

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 (see Figure 1). 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 PV 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 2-4 meters off the ground 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 a photovoltaic solar facility (Courtesy of Decchi)



Figure 2: Picture of a PV Panel (Courtesy of Decchi)

THE NEED FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

In terms of the EIA Regulations of June 2010 (Government Notice 544, R545 – 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. In terms of this legislation, a power generation facility with a generating capacity of 20MW or more, and which occupies an area of more than 20ha requires the undertaking of an Environmental impact Assessment process. Each facility will have an electricity generation capacity of up to 75MW. The individual projects have been registered with the National Department of Environmental Affairs under Application Reference Numbers:

- » Sirius One Solar PV Project - 14/12/16/3/3/2/469
- » Sirius Two Solar PV Project - 14/12/16/3/3/2/470

The EIA process comprises two phases – i.e. Scoping and Impact Assessment - and involves the identification and assessment of environmental impacts through specialist studies, as well as public participation. This process would be relevant for the proposed Sirius One and Sirius Two Solar PV Projects. One EIA process will be undertaken for both projects.

An Environmental 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. APS Invest One has appointed Savannah Environmental, as the independent environmental consultants, to undertake the required environmental assessments to identify and assess all the potential environmental impacts associated with the proposed project, 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, are associated with the PV solar energy facilities.

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 capacity.

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/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 facility may result in limited job opportunities and could impact on the local land use.

Specialist studies will be undertaken within the EIA process to identify and assess these potential impacts. 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 processes from the outset. Comments and inputs from I&APs during and EIA processes 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 reports.

On-going communication with registered parties will ensure that you will be kept informed of the progress of the various processes, 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 that 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 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 newspapers.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the draft reports within the stipulated 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 processes.

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

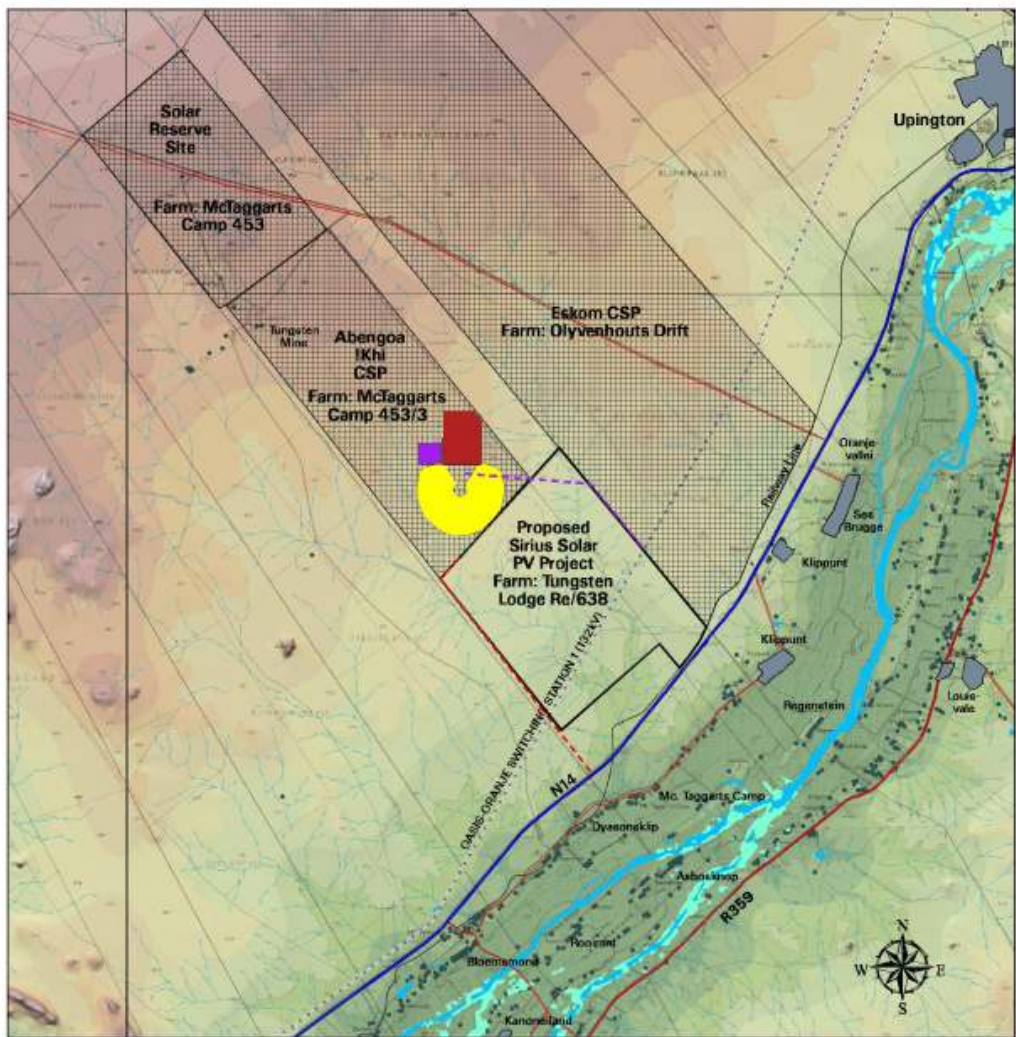
COMMENTS AND QUERIES

Direct all comments, queries or responses to:

Gabriele Wood of Savannah Environmental
PO Box 148, Sunninghill, Johannesburg, 2157
Phone: 011 656 3237
Fax: 086 684 0547
E-mail: gabriele@savannahsa.com

To view project documentation, visit

www.savannahSA.com



LEGEND

- Site identified for the Sirius Solar Photo Voltaic Project
- National Road
- Arterial/Main Road
- Secondary Road
- Perennial River
- Non-perennial River/Stream
- Settlement/Homestead/Structure
- Power Line
- Town/Built-up Area

AUTHORISED SOLAR ENERGY GENERATION INFRASTRUCTURE

- Abengoa IKhi CSP
- 50MW Heliostat Field & Power Tower
- 50MW Solar Trough Field & Power Island
- 5MW PV Plant
- Overhead Power Line
- Access Road

SHADED RELIEF/TOPOGRAPHY

Elevation above sea level (m)

770	840	910
780	850	920
790	860	930
800	870	940
810	880	950
820	890	
830	900	

0 6km