

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

BACKGROUND INFORMATION DOCUMENT

PROPOSED CONCENTRATED SOLAR POWER (CSP) AND PHOTOVOLTAIC (PV) PLANTS AND ASSOCIATED INFRASTRUCTURE ON THE FARM SAND DRAAI 391 IN THE SIYANDA DISTRICT MUNICIPALITY

June 2015

WHAT DOES THIS DOCUMENT TELL YOU?

This document aims to provide you, as an Interested and/or Affected Party (I&AP), with background information regarding the construction of two CSP plants and a PV plant proposed by SolAfrica Energy (Pty) Ltd (“SolAfrica”). The document also aims to provide information regarding the Environmental Impact Assessment (EIA) process to be undertaken. It further indicates how you can receive information, or raise issues, which may concern and/or interest you. The sharing of information forms the basis of the public participation process and offers you the opportunity to become actively involved in the project from the outset. Public participation plays an important role in the undertaking of an EIA, as input from I&APs ensures all potential issues are considered during the study.

WHAT IS A CSP & PV PROJECT?

In order to explore new generation options, find solutions that can contribute to meeting the growing electricity demand, and in an effort to utilise renewable energy resources, SolAfrica is assessing the feasibility of constructing the CSP and PV Plants with a combined generation capacity of approximately 425MW in the Siyanda District. These facilities will utilise the sun as a fuel source.

SolAfrica aims to create three project sites that will consist of up to:

- a 150MW Concentrated Solar Power plant based on Central Receiver technology;
- a 150MW Concentrated Solar Power plant based on Parabolic Trough technology; and
- a 125MW Concentrated Photovoltaic plant based on Photovoltaic technology.

The facilities will also include ancillary infrastructure in support of the power plants including: water abstraction systems, waste management systems, power lines, roads, storage facilities, administration and operation buildings, construction laydown areas and temporary housing facilities.

WHY IS THE PROJECT NEEDED?

Eskom is responsible for the provision of reliable and affordable power to South Africa. Eskom generates approximately 95% of electricity used in South Africa. Electricity cannot be stored in large quantities and generally must be used as it is generated. Therefore, electricity is generated in accordance with supply-demand requirements. The demand for electricity in South Africa has significantly increased. This growing demand is placing increasing pressure on South Africa's existing power generation capacity.

Increasing economic growth and social development within Southern Africa, on the other hand, is placing a growing demand on energy supply. Coupled with the rapid advancement in community development, is the growing awareness of environmental impact, climate change and the need for sustainable development. The use of renewable energy technologies to meet future energy consumption requirements is being comprehensively investigated by Eskom and other Independent Power Producers (IPPs).

Solafrica is an independent energy development company committed to investigating and evaluating options for solar energy projects in South Africa.

The successful use of renewable energy technology in South Africa still requires extensive investigation, however, CSP and PV technologies have been identified as being potentially viable and capable of being employed on a large scale. In order to assist Eskom in meeting future energy needs, Solafrica is currently assessing the feasibility of constructing two CSP plants and a PV Plant in the Siyanda District, subject to outcome of the EIA Process.

The CSP and PV plants are required to be sited on a technically feasible site. Solafrica has considered land availability, land use capability, fuel availability and costs, and other related aspects in the consideration of feasible sites. With consideration of the aforementioned aspects, Solafrica has identified the farm Sand Draai 391 near Groblershoop, Northern Cape Province, as a feasible locality for the establishment of the CSP and PV Plants. Groblershoop further has one of the higher solar values (Figure 1 and Table 1), with a Direct Normal Insolation (DNI) level of approximately 2900 kWh/m² per year.

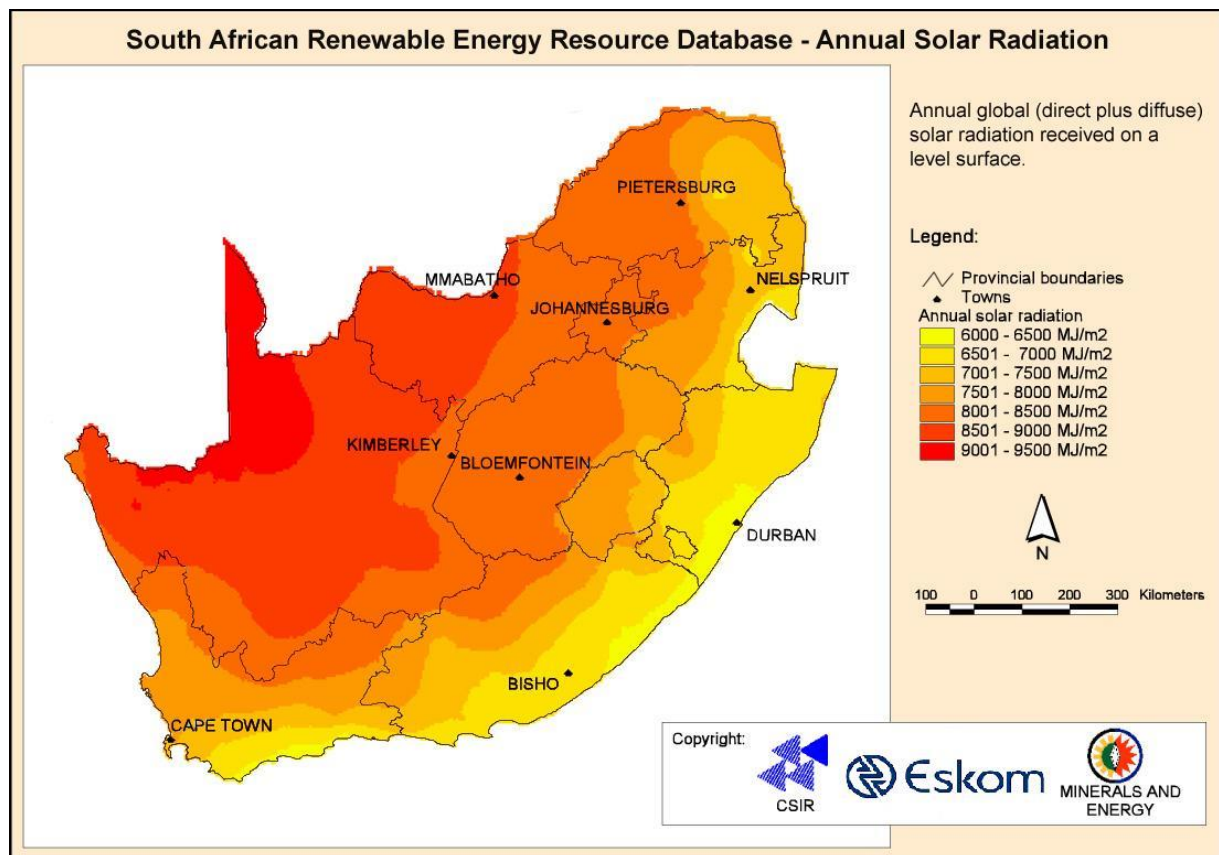


Figure 1: Annual incoming short wave radiation for South Africa.

Table 1: International Solar Potential relative to South Africa

Location	Site Latitude	Annual DNI (kWh/m ²)	Relative Solar Resource
South Africa			
Upington, North Cape	28°S	2,955	100%
United States			
Barstow, California	35°N	2,725	92%
Las Vegas, Nevada	36°N	2,573	87%
Albuquerque, New Mexico	35°N	2,443	83%
International			
Northern Mexico	26-30°N	2,835	96%
Wadi Rum, Jordan	30°N	2,500	85%
Ouarzazate, Morocco	31°N	2,364	80%
Crete	35°N	2,293	78%
Jodhpur, India	26°N	2,200	74%
Spain	34°N	2,100	71%

WHAT IS A CSP & PV PLANT AND HOW DOES IT WORK?

The project entails the construction of two CSP Plants and a PV plant with an electricity generation capacity of between 125 and 150 MW. In addition to the power plant, associated infrastructure such as roads, water pipelines, electricity distribution lines, storerooms and temporary waste storage facilities may be required.

SolAfrica is considering two concentrated solar power and PV technologies/systems:

- Parabolic Trough system,
- Central Receiver/Power tower system; and
- Photovoltaic system.

Trough systems use linear parabolic concentrators to focus sunlight to a receiver along a focal line mounted on the collector. The solar energy is absorbed in a working fluid (typically a heat-transfer oil, or in advanced systems, steam). The working fluid is then piped to a central location to power a conventional steam turbine (Figure 2).

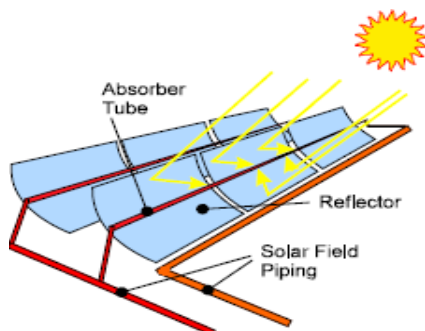


Figure 2: Solar trough system

Central Receiver systems use a field of large two-axis tracking mirrors (also called heliostats) to reflect solar radiation onto a centrally located tower-mounted heat exchanger (receiver). The solar

energy is absorbed by a working fluid (typically molten salt or air). This working fluid is then used to generate steam, powering a conventional turbine (Figure 3).

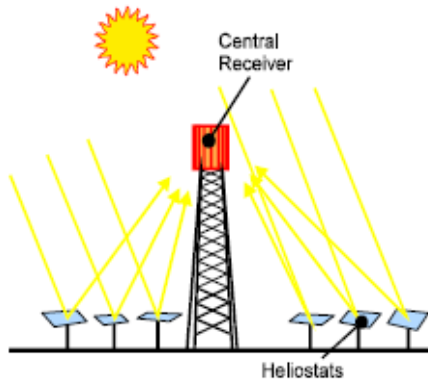


Figure 3: Power tower system

In **Photovoltaic Technology** the power conversion source is via photovoltaic modules that convert light directly to electricity. This differs from the other large-scale solar generation technology, concentrated solar power, which uses heat to drive a variety of conventional generator systems (Figure 4). Solar panels produce direct current (DC) electricity, so solar parks need conversion equipment to convert this to alternating current (AC), which is the form transmitted by the electricity grid. This conversion is done by inverters. To maximise their efficiency, solar power plants also incorporate maximum power point trackers, either within the inverters or as separate units. These devices keep each solar array string close to its peak power point.

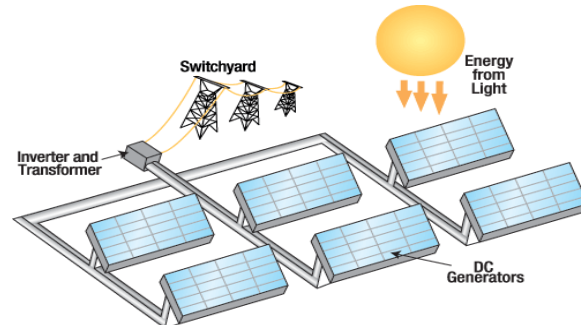


Figure 4: Photovoltaic Technology

WHICH SITES ARE CONSIDERED FOR THE CSP PLANT

The farm Sand Draai 391 has been identified as a potentially feasible site for the construction of the CSP & PV Plants and will be evaluated by means of the EIA Process. The entire farm will be evaluated during the Environmental Scoping Study (ESS) (Figure 5):

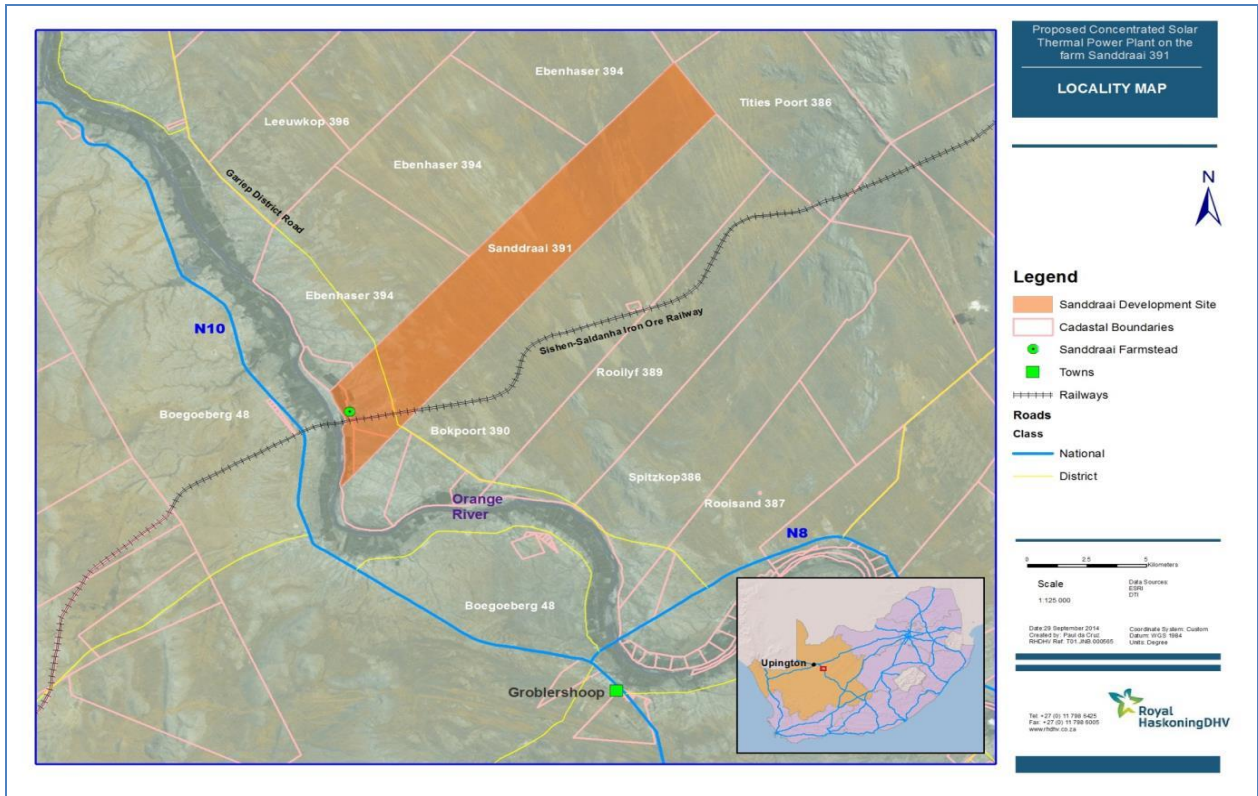


Figure 5: Proposed Site known as Sand Draai 391

Viable alternative sites will be identified during the ESS and a preferred site will also be identified for further investigation in the EIA Phase of the project.

Feasible alternative alignments for access roads, water supply pipelines and powerlines associated with the CSP & PV Plants will in addition be identified and evaluated during the EIA Phase.

CARBON FINANCE AND THE CLEAN DEVELOPMENT MECHANISM

The proposed plants are likely to qualify for registration as a Clean Development Mechanism (CDM) project. This allows so-called carbon credits to be sold from the project. This is because the project will lead to reductions in greenhouse gases due to the reduction in electricity that will need to be produced from coal-fired plants. If the project is formally registered with the Executive Board of the CDM, managed by the United Nations Framework Convention on Climate Change, these reductions in greenhouse gases can be registered as Certified Emission Reductions (CERs). CERs, the formal name for carbon credits, can then be sold to buyers who need these credits for compliance purposes in developed countries.

Solafrica intends to develop the project as a CDM project and to generate and sell CERs to support the financial viability of the project. Comments are invited on this aspect of the project as well.

WHAT ARE THE POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECT?

A number of potential environmental impacts associated with the project have been identified. As part of the Environmental Scoping Study (ESS), desk-top specialist studies will identify potential issues

which will require further investigation during the EIA Phase. The following specialist studies are anticipated:

Specialist Field	Organisation
Avifaunal Impact Assessment	Chris van Rooyen
Biodiversity Assessment	Clayton Cook & Prof. Leslie Brown
Geohydrology	Groundwater Consulting Services
Noise Impacts	Lodewyk Jansen (RHDHV)
Visual Impact Assessments	Paul da Cruz (RHDHV)
Heritage	Cobus Dreyer
Social Impact Assessment	Kementthree Moonsamy (RHDHV)
Air Quality Impact Assessment	Stuart Thompson (RHDHV)
Waste Impact Assessment	Siva Chetty (RHDHV)
Surface Water & Aquatic Impact Assessment	Paul da Cruz & Mathew Ross

Detailed studies on potentially significant impacts will be investigated in the EIA Phase of the project for each of the above aspects.

Information from the above studies will be used during the Scoping and EIA Phases of the project.

The ESS will highlight areas that should be avoided in order to minimise potential impacts, and evaluate the alternative sites for the proposed solar thermal power plant and the associated infrastructures. The Scoping Study will recommend the most favourable alternative site for the plant and the most favourable alternative for the associated infrastructures for further investigation in the EIA Phase.

WHY ARE ENVIRONMENTAL STUDIES NEEDED?

In terms of the Environmental Impact Assessment (EIA) Regulations (2014), SolAfrica requires authorisation from the National Department of Environmental Affairs (DEA) in order to undertake certain activities associated with the proposed project. In order to obtain authorisation for this project, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations. A waste license is also required in terms of the NEM: Waste Act (2008) and this will form part of the integrated environmental authorization and waste license process for both the CSP plants but excluding the PV plant.

An EIA is an effective planning and decision-making tool. It allows the environmental consequences of a proposed project to be identified and managed through the planning process. SolAfrica has appointed RHDHV, as independent Environmental Assessment Practitioners, to undertake the required environmental assessment processes to identify and assess all potential environmental impacts associated with the proposed project. As part of this assessment process, all I&APs will be actively involved through a Public Participation Process. The environmental assessment process will follow a two-phased approach (see Figure 6):

- Phase 1: Environmental Scoping Study (ESS), and

- Phase 2: Environmental Impact Assessment (EIA) – this phase includes the compilation of an Environmental Management Plan (EMP).

The ESS will evaluate the identified alternative sites, and will recommend the most favourable site for further investigation in the EIA Phase. Comments and inputs from I&APs during the EIA Process are encouraged in order to ensure that all potential impacts are being considered within the ambit of the study.

PUBLIC PARTICIPATION PROCESS

It is important that relevant I&APs are identified and involved in the Public Participation Process from the outset of the project. To ensure effective public participation, the process will include the following steps:

- STEP 1:** Advertise the EIA Process (regional and local press).
- STEP 2:** Register I&APs and key stakeholders on the database (on-going).
- STEP 3:** Consultation with and transfer of information to I&APs through consultation, public meetings, focus group meetings and key stakeholder workshops.
- STEP 4:** Record all comments, issues and concerns raised by I&APs within an issues trail, which will form an integral part of EIA Reports.
- STEP 5:** Invite I&AP comment and input on the draft Scoping and EIA reports (30-day comment period).

HOW CAN YOU GET INVOLVED?

1. By responding (by phone, fax or e-mail) to our invitation for your involvement which has been advertised in the regional and local newspapers.
2. By mailing or faxing the attached comment form to Royal HaskoningDHV.
3. By attending the meetings to be held during the course of the project. Should you register as an I&AP you will be invited to attend these meetings. The meeting dates will also be advertised in local newspapers.
4. By telephonically contacting consultants if you have a query, comment or require further project information.
5. By reviewing the draft Scoping and EIA Reports within the 30-day review periods respectively.

If you consider yourself an I&AP for this proposed project, we urge you to make use of the opportunities created by the public participation process to become involved in the process and provide comment, or raise those issues and concerns which affect and/or interest you, or about which you would like more information. Your input into this process forms a key part of the environmental assessment process and we would like to hear from you to obtain your views on the proposed project.

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

COMMENTS AND QUERIES

Kindly direct all comments, queries or responses to:

Johan Blignaut

PO Box 867

Gallo Manor

2052

☎:(011) 798 6000

☎: (011) 798 6010

✉:johan.blignaut@rhdhv.com

Website:www.rhdhv.co.za

**PROPOSED CONCENTRATED SOLAR POWER (CSP) AND PHOTOVOLTAIC (PV) PLANTS AS
WELL AS
ASSOCIATED INFRASTRUCTURE IN THE SIYANDA DISTRICT MUNICIPALITY
REGISTRATION AND COMMENT FORM**

PARTICULARS OF INTERESTED & AFFECTED PARTY	
Name:	
Organisation (if applicable):	
Postal Address:	
	Post Code:
Street Address:	
	Post Code:
Telephone:	E-Mail:
Mobile / Cellular Phone:	Facsimile:
Language Preference:	

1. What is your main area of interest with regards to the proposed project?

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2. Are there any concerns you would like to raise, at this stage, regarding the proposed project?

.....

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3. Are there any additional role-players whom we should involve in the process? **YES / NO**

If **“YES”**, please provide us with their contact details (Name, address & telephone no):

.....

.....

NAME:

SIGNATURE:

Please **complete** in full and return to:

<p>Johan Blignaut  PO Box 867, Gallo Manor, 2052 : (011) 798 6000 :(011) 798 6005 :johan.blignaut@rhdhv.com</p>

THANK YOU FOR YOUR TIME