

# Environmental Impact Assessments and Water Use License for the proposed Solar Park Integration Project

November 2011

## BACKGROUND INFORMATION DOCUMENT

### Purpose of this document

This Background Information Document (BID) provides Interested and Affected Parties (I&APs) with information on the environmental impact assessments (EIAs) and Water Use License (WUL) application being conducted by Zitholele Consulting (Pty) Ltd for the proposed Solar Park Integration Project.

This BID also provides I&APs with the opportunity to:

- Register as stakeholders in the public participation process; and
- Comment on the proposed project.

The purpose of these EIAs is to identify and evaluate potential impacts, to recommend measures to avoid or reduce negative impacts and to enhance positive impacts.

The decision-making authority is the Department of Environmental Affairs (DEA) in accordance with the National Environmental Management Act, (NEMA) (No 107 of 1998).

#### Please register

You will be included in the stakeholder database and receive further documents for comment. Your comments will ensure that all relevant issues are incorporated.

Either complete and submit the enclosed registration / comment sheet, write a letter, call or e-mail the public participation office, if you wish to raise any concerns regarding these EIAs.

All EIA documents will be available on the internet at [www.eskom.co.za](http://www.eskom.co.za) and [www.zitholele.co.za](http://www.zitholele.co.za).

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### Background

Eskom is the South African utility that generates, transmits and distributes electricity. Eskom supplies about 95% of the country's electricity, and about 60% of the total electricity consumed in Africa. Eskom plays a major role in accelerating growth in the South African economy by providing a high-quality supply of electricity.

In an effort to utilise renewable energy resources to meet the growing demand in electricity the South African Government will establish a R150 billion Solar Park at Olyvenhoutsdrift, 15 km west of Upington in the Northern Cape that will use the sun's energy to eventually generate 5 000 megawatt (MW) of electricity. The Upington area has been identified as one of the highest solar radiation locations in the world, providing the best opportunities for using the sun to generate electricity.

The Department of Energy is busy negotiating with several independent power producers to construct further solar plants at Solar Park that will use various solar technologies, such as various CSP solutions and concentrated photovoltaic technology.

Eskom is kicking off the development with the construction of a 150 megawatt (MW) Concentrating Solar Power (CSP) plant at Solar Park. Eskom received Environmental Authorisation (EA) for this project in August 2007.

Eskom has instructed Zitholele Consulting to apply for an amendment to the EA, because Eskom would like to increase the size of its CSP. Eskom is applying to increase the central receiver tower height of the plant from 220 m to approximately 300 m and wants to increase the number of heliostats (the mirror around the central receiver) from 6 000 to approximately 15 000. This will increase the size of the plant from 400 ha to approximately 800 ha.



A 10 MW solar plant in the USA using central receiver technology. Every mirror in the field of heliostats reflects sunlight continuously onto the receiver on the tower. A plant similar in design is to be constructed at the Concentrating Solar Power (CSP) near Upington.

(Source: NREL)

# Proposed Project

Eskom must undertake major infrastructural investments to integrate the Solar Park with the existing Eskom transmission network which are all listed activities in terms of the National Environmental Management Act (NEMA), Act No 107 of 1998 and the new Environmental Impact Assessment (EIA) regulations (Government Notice Regulation GNR 543 to 546, published in June 2010) and therefore requires environmental authorisation from the Department of Environmental Affairs (DEA). Konrad Krüger of Zitholele Consulting has been appointed by Eskom as the independent Environmental Assessment Practitioner responsible for the required environmental authorisations.

In addition to the EIAs, a Water Use License (WUL) application may also have to be submitted. Such an application will be necessary if a river is crossed with a power line and it has an impact on the flow of the river or its banks. There is a potential that the Orange River may have to be crossed towards Aries and Nieuwehoop substations.

The proposed project entails the construction of a substation at Solar Park, 400kV transmission lines to the east of Upington to feed the electricity into Eskom's national grid as well as the associated upgrade of the en-route substations and the construction of a number of 132kV distribution lines to the south of Upington. The proposed project area in the Northern Cape is characterised by cultivated lands, open fields, mining, game farms and residential areas.

The environmental processes necessary for the proposed developments have been divided into two full Scoping and Environmental Impact Reports (S&EIR) and three Basic Assessments (BA):

BA / S&EIR	DESCRIPTION OF THE PROPOSED ACTIVITIES
S&EIR 1	<ul style="list-style-type: none"> <li>Solar Park substation (400kV and 132kV);</li> <li>2 x (±) 125km 400kV lines from Solar Park to Aries substation (southwest of Kenhardt) and associated feeder bays; and</li> <li>1 x (±) 70km 400kV line from Solar Park to Nieuwehoop substation (northeast of Kenhardt) and associated feeder bays.</li> <li>Water Use License Application</li> </ul>
S&EIR 2	<ul style="list-style-type: none"> <li>1 x (±) 200km 400kV line from Solar Park to Ferrum substation (Kathu) and associated feeder bays.</li> </ul>
BA 1	<ul style="list-style-type: none"> <li>3 x 132kV lines for the Solar Park site and 2 x 20MVA Transformers at Solar Park site</li> </ul>
BA 2	<ul style="list-style-type: none"> <li>3 x 132kV lines for the independent power producers in Solar Park</li> </ul>
BA 3	<ul style="list-style-type: none"> <li>5 x 132kV lines for Solar Park; and</li> <li>2x (±) 25km 132kV lines to Gordonia Substation (Upington)</li> </ul>

Several alternative routes for each proposed line will be investigated during the EIA processes. A corridor of two kilometres wide will be investigated for each route. These alternatives will be screened to determine if they are environmentally feasible, to identify any high level fatal flaws and to propose other alternatives, if applicable.

The alternatives will be assessed by specialists before the decision making authority, the DEA, will study the findings of the S&EIRs and BAs and decide whether to grant or refuse authorisations and determine the alternative with the least impact on the environment as the proposed transmission line corridor.

A 400kV transmission line needs pylons, also called towers, with an average height of 40m and the line requires a servitude of 55m wide – 27.5m on either side of the centre line. A 132kV line requires pylons that are ~15m high and need a servitude of ~22m.

The reason for investigating a corridor of four kilometres wide while a servitude of only 55 m is needed for the transmission line, is once an alternative has been approved by the DEA a “walk down” of the approved corridor will take place by Eskom's team of negotiators together with relevant environmental specialists. This is to ensure that deviations of the route can still be made within the approved corridor should any environmental, social or economic sensitivities be observed or negotiations with landowners require the route to slightly deviate.

No structures, large trees or the stacking of any material may occur within the servitudes. Farmers are allowed to plant wheat, grain and maize, etc within the servitude underneath the transmission lines.

## Potential impacts of the power lines and substation

Transmission and distribution power lines, and a substation are large structures and have potential impacts on their surroundings. Possible impacts to the physical and socio-economic environments include:

- Land use – The proposed corridors pass through agricultural land and there may be restrictions to what a farmer will be allowed to do beneath the lines.
- Land use management – Eskom requires regular access to the transmission line for maintenance.
- Visual impact – The pylons have an average height of 40 m (Transmission) and will be highly visible in certain areas.
- Heritage resources – The proposed corridor will be investigated for archaeological and historical remains and old buildings.
- Electro-magnetic field – A 400kV line generates an electro-magnetic field and may have safety concerns that need to be investigated.
- The construction and placement of the pylons and the construction of access roads may have a negative influence on the vegetation, which must be surveyed for threatened and endangered plant and animal species.
- The transmission line might occur in the flight path of birds making mitigating measures necessary.

There are various types of pylon/tower designs that may be used for these 400kV transmission and 132kV distribution lines once authorisation has been granted. The need for selecting a pylon/tower type will be determined by the project team who will consider the most feasible structure to be used.

## Selecting alternatives

The following criteria were used to select the alternative routes for the proposed transmission and distribution lines:

- The corridors run parallel to existing lines that may minimise the environmental impact.
- The minimisation of visual impacts, especially over mountainous terrain.
- Avoiding, where possible sudden changes in the topography such as valley-mountain interfaces.
- Unstable geological and soil areas.
- Areas with severe sheet and gully erosion and overgrazed areas.
- Sensitive bird areas including foraging, roosting and nesting sites.
- Sensitive nature reserves and wildlife areas.
- Wetlands.
- Areas of human habitation.
- Industrial and mining areas.

## Environmental Impact Assessments (EIAs)

Two Scoping and Environmental Impact Reports (S&EIR) and three Basic Assessments (BA) are being conducted and decision-making processes are undertaken in terms of the National Environmental Management Act (NEMA), Act No 107 of 1998.

### ACTIVITIES ASSESSED DURING THE EIAs

In terms of Government Notice R. 545 of 2010, the following listed activity requires that a full Scoping and Environmental Impact Report (S&EIR) be undertaken:

Activity 8: The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275kV or more, outside an urban area or industrial complex.

In terms of Government Notice R. 544 of 2010, the following listed activities require that a Basic Assessment (BA) be undertaken:

Activity 10: The construction of facilities or infrastructure for the transmission or distribution of electricity: - (ii) inside urban areas or industrial complexes with a capacity of 275 kV or more.

Activity 26: Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

Activity 38: The expansion of facilities for the transformation and distribution of electricity where the expanded capacity will exceed 275 kV and the development footprint will increase.

## Scoping & Environmental Impact Report (S&EIR)

A Scoping and Environmental Impact Report (S&EIR) is a planning and decision-making process undertaken in terms of the National Environmental Management Act (NEMA), Act No 107 of 1998. It has two parallel and integrated processes namely, a technical and a public participation process.

The technical process investigates "hard" information: facts based on scientific and technical studies, statistics or technical data. It identifies the potential negative and positive consequences of a proposed project or development at an early stage and recommends ways to enhance positive impacts and to avoid, reduce or mitigate negative impacts.

The EIA regulations require that an Environmental Management Programme (EMProg) be developed. The EMProg provides recommendations on how to operate and implement the project. The provisions of the EMProg are legally binding on the developer and its contractors.

Public participation ensures that the S&EIR process is fair, open and transparent. It also provides stakeholders with sufficient information and gives them opportunity to contribute by reviewing and commenting on the information.

Arrangement with regards to negotiations with landowners, if necessary, for land and servitudes and compensation, will be shared with the stakeholders during the public participation process of the S&EIR. However these negotiations will take place in a separate process. The findings of the S&EIR will assist landowners and Eskom to determine the extent of local impacts in support of any negotiations that might be necessary.

The public participation process is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner to assist them to:

- Raise issues of concern and make suggestions for alternatives and enhanced benefits;
- Contribute local knowledge;
- Verify that their issues have been captured and considered by the technical investigations;
- Comment on the findings of the S&EIR.

## PHASES OF AN S&EIR

### SCOPING PHASE

The first phase of a S&EIR is the Scoping Phase, which is conducted to gain understanding of the potential environmental issues that are relevant to the project and to determine where further information is required, in the form of specialist studies / investigations.

The Scoping Report and Plan of Study for the S&EIR are submitted to the Department of Environmental Affairs (DEA) for review and to approve the proposed approach to the detailed investigation required in the next phase.

Activities involved in the Scoping Phase include:

- Meetings with authorities to agree on process and study requirements;
- The placing of site notices, the distribution of letters, this Background Information Document and an invitation to contribute to the EIA process to Interested and Affected Parties in the project area and beyond;
- Advertisements in local and regional newspapers to announce opportunities to participate;
- Progress feedback letter to be issued and announcements to be made of the availability of the Draft Scoping Report (DSR) and Issues and Responses Report (IRR);
- Distribution of a DSR, including IRR, for comment;
- Convening stakeholder workshops in the project area to obtain comment on the DSR;
- Submission of a Final Scoping Report (FSR), capturing all issues raised for the impact assessment, to the DEA;
- Submit the Plan of Study for the S&EIR to the DEA;
- Distribution of the FSR for information; and
- Progress feedback letter to stakeholders.

### ENVIRONMENTAL IMPACT REPORT PHASE

The second phase of the S&EIR is an Impact Report Phase which entails undertaking various specialist studies, compiling an Environmental Impact Report (EIR) and a Draft Environmental Management Programme (EMProg).

As part of the assessment, an EMProg for the project will also be submitted to the DEA for their approval. Following the EMProg, pre and post construction, will ensure compliance to environmental regulations during the planning, construction, operation and decommissioning (if applicable) phases.

The list of identified specialist studies required for this S&EIR (to date) is listed below (all seasonal dependent studies will be undertaken in the wet season):

- Terrestrial Ecology Assessment (Fauna and Flora);
- Avi-fauna Assessment;
- Heritage Impact Assessment;
- Social Impact Assessment;
- Surface Water and Wetland Assessment;
- Soils and Land Capability / Agricultural Assessment;
- Geotechnical Assessment;
- Visual Impact Assessment; and
- Geographic Information Systems (GIS).

The names of the specialists who will undertake these studies are available from the public participation office.

Specific activities in this phase will include:

- Specialist studies focused on outcomes of the Scoping Phase and issues raised by stakeholders;
- Progress feedback to stakeholders;
- Compilation of a Draft EIR indicating the potential positive and negative impacts and measures to enhance positive impacts and to reduce or avoid negative impacts;

- Environmental Impact Statement, highlighting the preferred alternative and reasons thereof;
- Advertise the availability of the Draft EIR in local and regional newspapers;
- Distribution of the Draft EIR, including Issues and Responses Report, for comment; and
- Stakeholder meetings in the project area to present the findings of the S&EIR for stakeholder comment.

The Draft EIR and EMProg will then be finalised and submitted to the DEA for a decision.

## DECISION-MAKING PHASE

The third phase involves a decision by the decision-making authority, the DEA in this case. The DEA must accept or reject this report within 105 days. Stakeholders will be advised of the DEA's decision if Environmental Authorisation has been granted or not and the appeal procedure should they wish to appeal the decision.

## BASIC ASSESSMENT

A Basic Assessment (BA) is required for projects with less significant impacts or impacts that can easily be mitigated. The difference between the S&EIR and the BA processes relates to the nature of the proposed development in terms of its potential impact on the environment, and this is reflected in the level of detail that information is collected in as well as the level of interaction with I&APs. The information contained in the Basic Assessment Report (BAR) must provide the competent authority with adequate information for informed decision-making. The BAR, which is the final stage of investigation and recommendation, must:

- Identify the potential impacts of the proposed development;
- Record the issues, concerns and suggestions raised by I&APs; and;
- Outline the measures to be taken to avoid or reduce negative impacts and enhance positive impacts.

The BA process has, similar to the S&EIR process, a technical and a public participation component which run parallel to each other.

The technical component is divided into two phases:

- The Inception Phase: and the
- Basic Assessment and Investigation Phase.

In the Inception Phase an application form is submitted to the competent authority to confirm whether the technical and public participation processes and measures suggested, are in accordance with its requirements. During this phase the proposal to construct several 132kV power lines is screened for potential environmental and social impacts. As part of the process to refine the recommendation a field inspection of the site is undertaken together with independent specialists.

Once the Inception Phase has been concluded the terms of reference for specialist studies will be confirmed and investigations will continue. The findings of the specialist studies, together with input from the public participation process will be incorporated into a Basic Assessment Report, which is the outcome of this phase. A Draft Basic Assessment Report will be available for public comment before the document is finalised and submitted to the competent authority – the Department of Environmental Affairs (DEA).

## BASIC ASSESSMENT REPORTS

The Draft Basic Assessment Report, together with a Draft Environmental Management Programme will be made available for comment by I&APs.

The Final Basic Assessment Report will be prepared, incorporating all additional inputs received during the public comment period. This final report will then be submitted to the DEA for authorisation.

## DECISION-MAKING PHASE

Once the relevant authority, the DEA, has issued the Environmental Authorisation, I&APs will be notified of the decision and what procedure to follow should they wish to appeal the Environmental Authorisation.

## WATER USE LICENSE (WUL) APPLICATION

In terms of the National Water Act (NWA), Act 36 of 1998, the National Government, acting through the Minister of Water Affairs, is the public trustee of South Africa's water resources, and must ensure that water is protected, used, development, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The Minister is responsible to ensure that water is allocated equitably and used beneficially in the public interest, while promoting environmental values. Government, acting through the Minister, has the power to regulate the use, flow and control of all water in South Africa.

The proposed 400kV power line to Aries and Nieuwehoop substations may require the application of a Water Use License, since the lines will most likely have to cross the Orange River.

The appointed consultant's proposed methodology and work programme will ensure a harmonised authorisation process addressing DWA's needs in terms of a WUL. A Draft Technical Report for Eskom will be compiled, using existing information available and specialist investigations commissioned by Eskom. This Draft Technical Report will then be made available to I&APs and the DWA so that substantiated issues and comments can be made.

### **Water uses to be licensed for**

In terms of the NWA the following water uses undertaken as part of the construction of the power lines require licensing under the following sections of the Act:

Section 21 (c): Impeding or Diverting the Flow of Water in a Watercourse; and

Section 21 (i): Altering the Bed, Banks, Course or characteristics of a watercourse.

### **Process to follow with the application of a WUL**

#### Legal Validation and Assessment

Legal Assessment in respect of the legal status of the existing water uses has to be undertaken. This report will have to be submitted to the DWA.

#### Application initiation discussion

A meeting between the applicant and the DWA should be held to ensure that DWA agrees with the water uses being applied for.

#### Formal submission of application forms

In accordance with this legislation, the relevant WUL will be submitted to the DWA with the Final WUL report.

#### Public participation

The following activities will be utilised in the public participation process towards the application of the license:

- Advertising: Public notice in regional and local newspapers;
- Supplying adjacent landowners with a BIDs;
- Contacting stakeholders, notifying them of the process;
- Documenting stakeholder correspondence within the Draft Technical Report, that will be made available for public review;
- Notifying stakeholders when the WUL is issued.

#### Draft Technical Report

The Draft Technical Report will include, amongst others, the following:

- Introduction
- Project Description
- Environmental Status Quo
- Quantitative Risk Assessment
- Cost-benefit analysis
- Integrated Environmental Management
- Monitoring systems
- Operational Management
- References and Specialist studies

#### Stakeholder Review of the Draft Technical Report

Subsequent to the compilation of the draft report, the report will be made available for stakeholder comment, prior to submission to the DWA.

#### Submission

All relevant documentation will be submitted to the DWA to inform decision making in the license application.

#### Decision Making

Once all relevant documentation has been submitted to the DWA, a decision will be made to approve the WUL for Eskom or to reject the application. The decision will be made available to the stakeholders. A stakeholder or the applicant can appeal the decision through the correct channels.

### **Permission for access to land**

During the EIA/WUL processes, specialists will request access to private land so as to assess the impacts of the proposed project. The team will work under a strict code of conduct which requires, for example, prior permission for access, not disturbing farm activities and restoring any damages they may cause. Individuals will inform landowners when they are leaving a particular property. Individuals will carry identification and a letter of appointment from Eskom.

This document is available in English, Afrikaans and Setswana

Visit our website [www.zitholele.co.za](http://www.zitholele.co.za) for more information

### **Your registration as an I&AP and comments are important**

The purpose of an EIA and WUL process is to provide the authorities with sufficient information on which to base a decision on whether to grant environmental approval to the proposed project or not, and if yes, under which conditions.

The contributions of stakeholders from all sectors of society will assist in informed decision-making.

Zitholele Consulting (Pty) Ltd invites all stakeholders to participate freely, and to submit any comments or information they feel may be useful.

Your comments will ensure that all relevant issues are evaluated in the EIA and WUL processes.

You can also contact the public participation office if you require a copy of the EIA Regulations, the User Guide to the NEMA or any other material that will assist you to comment.