



**PLAN OF STUDY FOR AN ENVIRONMENTAL
IMPACT ASSESSMENT (EIA) FOR THE
PROPOSED ESTABLISHMENT OF A NEW
CONCENTRATING SOLAR POWER (CSP) PLANT
AND ASSOCIATED INFRASTRUCTURE IN THE
NORTHERN CAPE PROVINCE**

**Submitted to the National Department of Environmental Affairs and
Tourism**

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1. INTRODUCTION

1.1. Background to the Project

Eskom Holdings Limited (Eskom) is responsible for the provision of reliable and affordable power to South Africa. Electricity cannot be stored and must be used as it is generated. Therefore, electricity must be generated in accordance with supply-demand requirements. Eskom's core business is in the generation, transmission (transport), trading and retail of electricity. In terms of the Energy Policy of South Africa "energy is the life-blood of development". Eskom currently generates approximately 95% of the electricity used in South Africa. Therefore, the reliable provision of electricity by Eskom is critical for industrial development and related employment and sustainable development in South Africa.

1.2. The Need and Justification for the Proposed Project

It is important that the investment decisions taken by Eskom are based on, and are in support of, the energy related strategic policies and plans of South Africa and integrate and consider the impact of the developments (both positive and negative) on economic development, environmental quality and social equity.

These policies and plans are based on the availability of energy resources, technology and the environmental opportunities and constraints of the region.

Virtually all South African (and many African) electricity users are dependent on Eskom to supply that electricity but Eskom is not free to supply that electricity as it sees fit. As a state-owned company Eskom's principal shareholder is government. Government in turn controls what Eskom does in a variety of ways – firstly through the appointment of Eskom's Board of Directors and secondly through a range of policies, strategies and plans that are principally lead by the Department of Minerals and Energy (DME). In addition Eskom is controlled by independent regulators including the National Energy Regulator of South Africa (NERSA) and the National Nuclear Regulator (NNR). These independent regulators serve to protect the public interest and, in the case of the NERSA dictate the prices that Eskom can charge for electricity, what types of facilities can be established to generate, transmit and distribute electricity, together with a range of other controls.

Within this framework Eskom also needs to respond to a growing electricity demand. In particular there is a need to establish new generation capacity in South Africa within the next several years. That generation capacity can be met through the harnessing of different energy sources and the application of a number of different technologies. These technologies differ markedly though, in their generation costs, suitability for the South African environment and state of commercial development. The choice of generation technology is thus multi-

faceted and complicated and has to happen also within the context of the policy framework described above, as well as within the legal/regulatory framework that has a bearing on these activities.

Eskom uses a modelling tool called integrated strategic electricity planning (ISEP) to plan its future capacity strategy. By analysing usage patterns and growth trends in the economy, and matching these with the performance features of various generation technologies and demand-side management options, ISEP identifies the timing, quantity and type (base load or peaking) of new capacity required over the next 20 years. The plan is reviewed annually as part of Eskom's strategic and business planning process. Eskom has embarked on a capital expansion plan at a projected cost of R97 billion over five years.

The original capacity expansion programme was based on a forecast of 4% GDP growth per annum over the next few years, resulting in 2 – 3% per annum growth in electricity demand. This translated into an additional 1 100MW of capacity per year. Eskom has accelerated the expansion programme in line with government's drive to boost economic growth to 6% by 2010, and investment decisions will be based on this growth target. It is estimated that this will result in average growth in electricity demand of 4,4% per annum, requiring approximately 47 252MW of new capacity to be built between 2005 and 2025, or roughly 2 000MW per annum.

In developing South Africa's capital expansion programme for the energy sector, three plans are used as input: the Department of Minerals and Energy's national integrated energy plan, the National Energy Regulator's national integrated resource plan and Eskom's ISEP.

Eskom has also entered into a demand-side management programme in order to defer the commissioning of new plants. Despite recent cost escalations, the most attractive supply-side option remains the return to service of three mothballed power stations – Camden, Grootvlei and Komati – which were placed in reserve storage during a period of high excess capacity on the Eskom system. Eskom has also investigated a variety of options, including conventional pulverised fuel plants, pumped storage schemes, gas fired plants, nuclear plants (PBMR), greenfield fluidised bed combustion technologies and renewable energy technologies (mainly wind and solar projects). There are also potential power plant development projects external to South Africa which could form part of power trading within the Southern African Power Pool (SAPP).

Eskom's renewable energy strategy supports the South African Government's white paper on renewable energy. Eskom is committed to investigate and evaluate the options for the diversification of the energy mix over time (including renewable energies).

All renewable energy resources available in South Africa will be evaluated for their applicability to Eskom. Eskom's strategy will have to be updated as Government policy is finalised.

A number of research demonstration facilities continue to be operated as part of Eskom's renewable energy research programme. These include the operation of Southern Africa's first wind energy demonstration facility in the Western Cape, which was opened in 2003. In addition, Eskom conducted a number of pilot projects to assess issues related to the green power market in South Africa.

Eskom has been involved with renewable energy technologies for some time, through various non-grid electrification initiatives. The programme's ultimate objective is to evaluate whether large scale, renewable electricity generation is a viable supply-side option for Eskom and South Africa. The four areas addressed by the programme are biomass, solar thermal, wave and wind energy. The successful use of renewable energy technology in South Africa still requires extensive investigation, but the Concentrating Solar Power (CSP) technology has been identified as potentially being viable and capable of being employed on a large scale. In order to meet the future energy needs, Eskom Holding Limited (Eskom) is currently assessing the feasibility of constructing a Concentrating Solar Power (CSP) Plant in the Northern Cape Province.

South Africa ratified the United Nations Framework Convention as a developing country and thus has no requirements at present to reduce green house gas emissions. South Africa has also recently acceded to the Kyoto Protocol and as such is eligible to participate in the Clean Development Mechanism (CDM). South Africa is also particularly vulnerable to the adverse impacts of climate change, both due to impacts on the weather patterns in Southern Africa and impacts on the economy as a result of the response measures taken by developed countries.

Eskom has a number of current initiatives, which promote greenhouse gas emissions reductions. These include demand side management programmes and internal efficiency programmes. Future supply side options are highlighted in the sections on Integrated Strategic Electricity Planning (ISEP) on renewable energy. Eskom is actively exploring potential CDM opportunities and CDM is one of a number of mechanisms which can assist with the transfer of new technologies as well as addressing socio-economic issues. Some further background on CDM and the South African mandate is as follows:

- South Africa ratified the United Nations Framework Convention on Climate Change (UNFCCC) in August 1997 and acceded to the Kyoto Protocol, the enabling mechanism for the convention, in August 2002.
- The Kyoto Protocol provides for flexibility mechanisms including the Clean Development Mechanism (CDM).

- The CDM is a project-based instrument that allows public or private entities to invest in Green House Gas (GHG) mitigating activities in developing countries and earn abatement credits called Certified Emissions Reductions (CERs).
- These CERs can be traded on an open market.
- The CDM is the only mechanism through which SA could participate in the international carbon market.
- The mechanism is important to developing countries as it provides a sweetener for attracting foreign investment in projects that are sustainable.
- It is also important for providing additional (although small) financing for projects of this nature.

The CDM Requirements with regards to the CSP Project include the following:

- Requirements defined by the international process include:
 - * Projects must result in real, measurable and long-term emission reductions, as certified by a third party agency.
 - * Emission reductions must be additional to any that would occur without the project.
 - * Projects must be in line with sustainable development objectives, as defined by the national government. In SA this is the DME which is the designated national authority (DNA) for the CDM.
- The CSP qualifies as a CDM project as it meets all these international requirements.
- Importantly the CSP also meets the South African sustainable development criteria as defined by the DNA.
- The CSP will potentially reduce 367 000 tCO₂/ annum compared to what would have occurred without the project.
- Current market estimations for CERs are anywhere from 5 to 15 Euro per ton of CO₂.

1.3. Overview of the Proposed Project

The project involves the proposed establishment of a new concentrating solar power plant and associated infrastructure in the Northern Cape Province. The power plant is proposed to operate at an installed capacity of approximately 100 MW. The exact output will depend on the generating technology utilised, the specification of the equipment installed, and the ambient operating conditions. The potential impacts associated with the maximum output of 100 MW have been evaluated within the environmental studies.

The footprint of the proposed new concentrating solar power plant is approximately 4 square kilometres of terrain with little relief to satisfy the construction needs. The key factor, however, is the amount of thermal storage required, as this determines the number of heliostats to be installed.

It is envisaged that the proposed power plant will utilise dry cooling technology as a result of unavailability of water in the proposed area; but alternative cooling technologies are being investigated. Dry-cooled technology reduces the total amount of water consumed at power stations when compared to conventional wet-cooling systems, but reduces the efficiency of the plant. According to design specification, the dry-cooled station would utilise approximately 200 000 cubic metres of water per year.

The CSP plant is required to be sited on a technically feasible site. A Pre-Environmental Scoping Study (an environmental screening study) – undertaken by independent consultants - together with Pre-Feasibility Study undertaken by Eskom, considered land availability and land use capability, fuel availability and costs and other related aspects. Through this study, Northern Cape Province was identified as a feasible locality for the establishment of the CSP plant. In addition to the above aspects, the Northern Cape Province has one of the highest solar potential values (figure 1.1) in the world, with a Direct Normal Insolation (DNI) level of approximately 2900 kWh/m² per year.

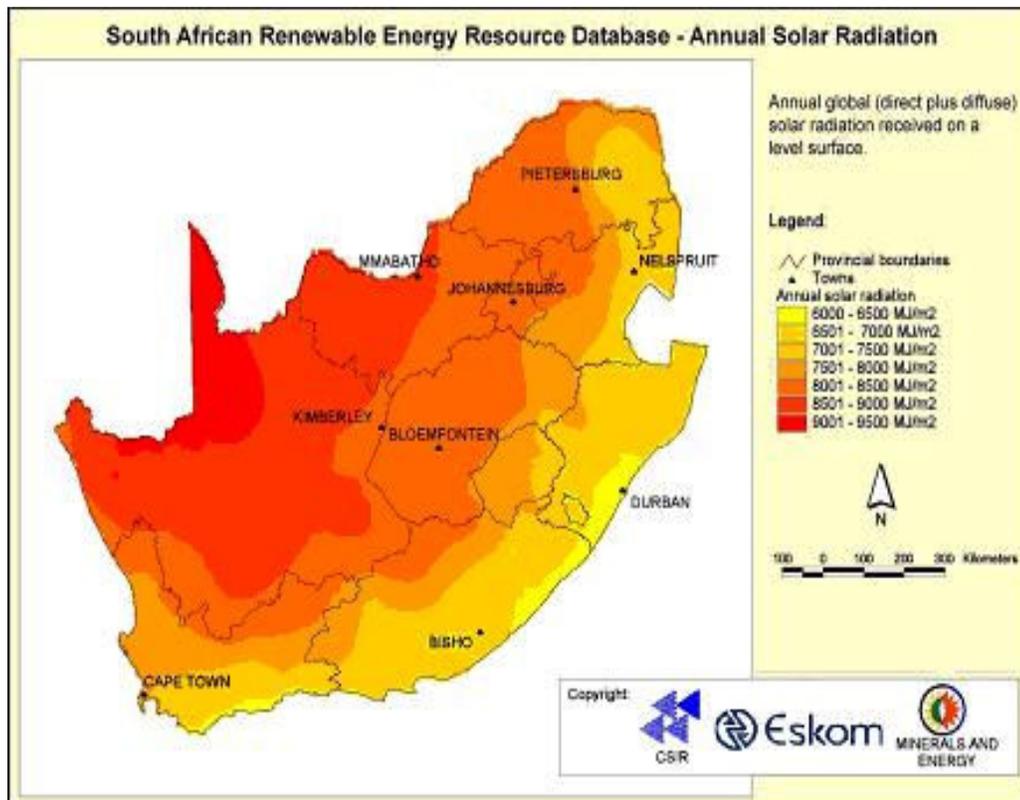


Figure 1.1: Annual incoming short wave radiation for South Africa.

Table 1.1: International Solar Potential relative to South Africa

Location	Site Latitude	Annual DNI (kWh/m ²)	Relative Solar Resource
South Africa			
Upington, Northern Cape	28°S	2955	100%
United States			
Barstow, California	35°N	2725	92%
Las Vegas, Nevada	36°N	2573	87%
Albuquerque, New Mexico	35°N	2443	83%
International			
Northern Mexico	26 - 30°N	2835	96%
Wadi Rum, Jordan	30°N	2500	85%
Quarzazate, Morocco	31°N	2364	80%
Crete	35°N	2293	78%
Jodhpur, India	26°N	2200	74%
Spain	34°N	2100	71%

1.4. Scope of Environmental Investigation

Eskom Holdings Limited acknowledges the need for undertaking comprehensive environmental studies in order to identify and assess all potential environmental impacts (social and biophysical) associated with the proposed project. This is also a legislative requirement.

In terms of Regulations R1182 to R1184 of the Environment Conservation Act (No 73 of 1989) as amended, the following listed activities, which may have an impact on the environment, are applicable:

1. The construction, erection or upgrading of –
 - (a) Facilities for commercial electricity generation with an output of at least 10 megawatts and infrastructure for bulk supply;
 - (c) the construction of transportation routes and structures, and manufacturing, storage, handling or processing facilities for any substance which is considered as dangerous or hazardous and is controlled by national legislation;
 - (d) roads, railways, airfields and associated structures;
 - (g) structures associated with communication networks, including masts, towers and reflector dishes, marine telecommunication lines and cables and access roads leading to those structures, but not including above ground and underground telecommunication lines and cables and those reflector dishes used exclusively for domestic purposes;
 - (o) sewage treatment plants and associated infrastructure;

2. The change of land use from:

(c) Agricultural or zoned undetermined use or an equivalent zoning, to any other land use;

The environmental studies will follow a two-phased approach:

- Phase 1: Environmental Scoping Study
- Phase 2: Environmental Impact Assessment

This Plan of Study outlines the activities to be undertaken within the EIA phase of this study (i.e. Phase 2).

1.4.1. Environmental Scoping Study

An issues-based Environmental Scoping Study has been undertaken for the proposed project. Existing information and input from specialists, the authorities and Interested and Affected Parties (I&APs) was used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project.

The Environmental Scoping Report evaluated three candidate sites identified as potentially feasible sites for the construction of the CSP plant. The sites were evaluated in terms of their suitability for development in order to nominate a preferred site for the construction of the CSP plant and associated infrastructure.

A high suitability for the proposed development was attributed to the Farm Olyvenhouts Drift, due to the low ecological sensitivity and limited impact on the social environment. The suitability of the Farm Bokpoort was considered to be medium-high.

In terms of the studies undertaken by the specialists, no environmental fatal flaws were identified as a result of the proposed project. However, a number of potentially significant environmental impacts have been identified as requiring further in-depth study in the context of an EIA. The EIA will provide an assessment of these potential impacts and recommend appropriate mitigation measures where required. The farm Olyvenhouts Drift was considered the most suitable for the development of the CSP plant and/or associated infrastructure (see Figure 1.2), and was nominated for further detailed studies. This conclusion was confirmed using a comparative mathematical model.

The draft Environmental Scoping Report was made available for public review from Thursday 22 June 2006 to Friday 21 July 2006 at the following locations:

- !!Khara Hais Library (Upington)

- Pabalello Public Library (Upington)
- Forum Public Library (Upington)
- !!Khara Hais Local Municipality (Upington)
- Upington Magistrate Office
- Agrimark (Upington)
- Karstens Boerdery (Upington)
- !Kheis Local Municipality (Grobblershoop)
- !Kheis Public Library (Grobblershoop)
- Offices of Bohlweki Environmental (Kyalami Office Park, Kyalami)
- www.bohlweki.co.za

Copies of the draft ESR were also submitted to other key authorities such as DWAF and SAHRA. A final Environmental Scoping Report which included the comments received from the public during the review period was submitted to National Department of Environmental Affairs and Tourism (DEAT) and the Northern Cape Department of Tourism, Environment and Conservation (NC DTEC) for review and approval.

1.4.2. Environmental Impact Assessment (EIA)

All potentially significant environmental impacts (social and biophysical) associated with the proposed power plant and associated infrastructure have been identified in the Scoping Study and will be further investigated and assessed within the EIA through specialist studies. These studies will consider the one preferred site identified during the site selection process in the Environmental Scoping Study, namely the farm Olyvenhouts Drift (see Figure 1.2). Mitigation measures will be proposed, where required.

The EIA will aim to adequately investigate and address all environmental issues in order to provide the National DEAT and Northern Cape DTEC with sufficient information to make an informed decision regarding the proposed project.

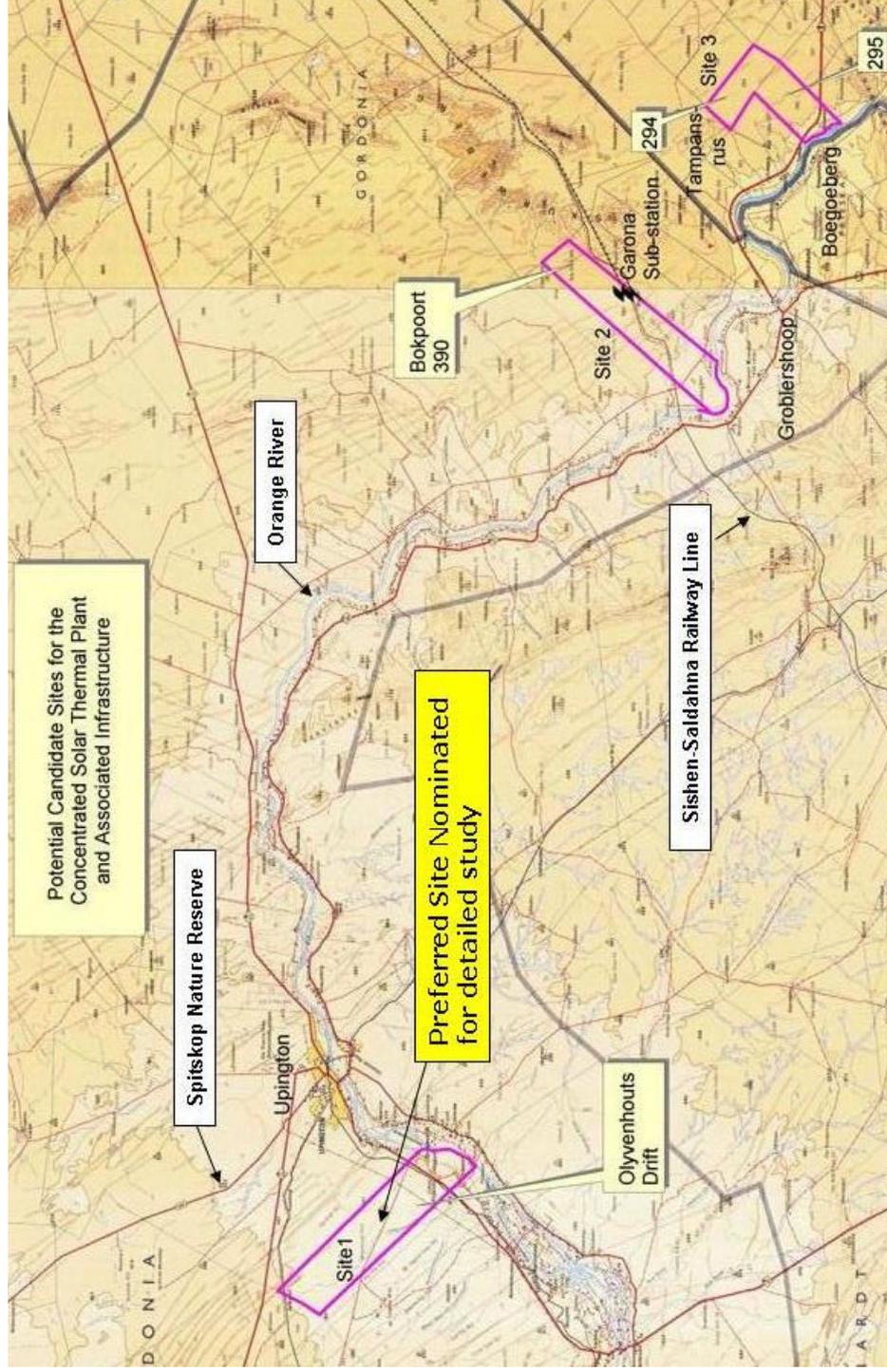


Figure 1.2. Map showing the preferred site nominated for investigation during the EIA phase

2. PARTICULARS OF THE APPLICANT

The project proponent/applicants are represented by:

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3. ENVIRONMENTAL CONSULTANTS

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3.2. Environmental Study Team

Details of the environmental study team and their fields of specialisation are provided in Table 4.1 below.

Table 4.1: Proposed specialist team and their areas of expertise

Joggie van Staden of Bohlweki Environmental	Project Director for the EIA process and public participation process
Ashlea Strong of Bohlweki Environmental	Project Manager for the EIA process and public participation
Johan du Preez of MDA Consulting	Ecological assessment (flora and fauna)
Jon Smallie of Endangered Wildlife Trust	Assessment of potential impacts on avifauna
Lourens du Plessis of MetroGIS	Visual Impact assessment and GIS mapping
Jude Cobbing and Arthur Chapman of CSIR	Assessment of surface and groundwater impacts
Garry Paterson of the Agricultural Research Council (ARC)	Assessment of soils and agricultural potential
Cobus Dreyer of University of the Free State	Heritage Impact Assessment
Derek Cosijn of Jongens Keet and Associates	Noise Impact Assessment

Jan Perold of Afrosearch	Social Impact Assessment (SIA)
Nicolene Venter of Bohlweki Environmental	Public participation & stakeholder involvement process
Michael Vermaak of Imbewu Enviro-Legal Specialists	Legal review and advise
David de Waal of Afrosearch	Facilitation of public meetings

4. APPROACH TO UNDERTAKING THE PROJECT

In order to provide National DEAT and Northern Cape DTEC with sufficient information to make an informed decision regarding the proposed project, the following activities will be undertaken.

4.1. Authority Consultation

Consultation with all relevant authorities initiated during the Scoping Phase will continue throughout the duration of the project. The representatives from the relevant Departments will be requested to formally provide input into the EIA process. The authorities to be consulted include, *interalia*:

- The Department of Water Affairs and Forestry (DWAF)
- The Northern Cape Department of Labour
- The Northern Cape Department of Health
- The Northern Cape Department of Agriculture
- The Northern Cape Department of Minerals and Energy
- The !!Khara Hais and !Kheis Local Municipalities
- The Northern Cape office of South African Heritage Resources Agency (SAHRA)
- The Northern Cape Department of Land Affairs
- The Department of Transport
- The Department of Public Works
- The Department of Trade and Industry
- The Department of Science and Technology

4.1.1. Meeting with Authorities regarding the Environmental Impact Assessment Report

An authority meeting with National DEAT and Northern Cape DTEC will be held to discuss the EIA Report prior to finalisation.

4.2. Environmental Impact Assessment

4.2.1. Aims of the Environmental Impact Assessment

The Environmental Impact Assessment (EIA) will aim to achieve the following:

- to provide an overall assessment of the social and biophysical environments of the area affected by the proposed establishment of a concentrating solar power plant and associated infrastructure;
- to undertake a detailed assessment of the farm Olyvenhouts Drift in terms of environmental criteria;
- to identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded.

4.2.2. Issues not requiring further assessment

A number of potentially significant issues were identified within the Scoping Study. These issues do not require further investigation within an EIA since they were fairly detailed during scoping phase:

- *Potential Impacts on Soils and Agricultural Potential*

It is normal practice that, once a preliminary decision is taken on which of the three sites is the most suitable, a more detailed soil investigation be carried out, at a scale of 1:20 000 or finer, to more accurately characterize the soils in the specific site area and to ensure that the best possible location within the site be chosen, in terms of agricultural potential.

However, it is almost certain that, due to the arid nature of the region and the shallow or sandy nature of the soils, any survey, no matter how detailed, will fail to locate any soils with meaningful arable potential.

The recommendation is therefore that, unless specific problems (such as erosion) occur in the vicinity of the chosen site, a detailed soil investigation should not be necessary.

- *Sites of Archaeological, Cultural and Historical interest*

The differences in the archaeology and cultural heritage between the three sites are insignificant and there is no clear preference for any one of the three possibilities.

Therefore, depending on the findings of the other specialists, the most practical site should be selected so that the planning and the development of the installation may proceed. No further studies are deemed necessary with regards to the impact of the CSP Plant on heritage resources.

- *Potential Impacts on Tourism*

The tourism assessment in the scoping phase was fairly detailed and comprehensive and ultimately recommended the inclusion of more detailed studies during the EIA phase of the project. However, due to the positive nature of the impact at any of the three sites in question, it is thought that further studies are unlikely to provide any new additional information for decision-makers. Therefore it is recommended that no additional studies are undertaken in terms of the tourism impact for this project.

4.2.3. Detailed Studies to be undertaken as part of the EIA

A number of potentially significant issues were identified within the Scoping Study. These issues require further investigation within EIA in order to ensure that potential environmental impacts associated with the proposed project are limited through mitigation. These detailed investigations will consider the nominated preferred site:

- *Potential Impacts on Surface Water Resources*

No further detailed studies are required to be undertaken regarding the possible impact of a CSP on regional or local hydrology. The hydrological impacts of a CSP need not be addressed in a subsequent Environmental Impact Assessment. However, due to the great size of the plant, specific attention should be given to design parameters for surface water flow during peak rainfall events. These should also be incorporated in the EMP for the construction and operational phases of the project

However, additional studies on the water use and water availability with regards to the recommended site should be undertaken in the Environmental Impact Assessment Phase.

- *Potential Impacts on Ground Water Resources*

It is recommended that additional studies are carried out during the EIA phase, which should include the following:

- * Investigation of the positions and water levels of all accessible boreholes on the site, so that a piezometric surface can be determined.

- * Basic water quality parameters are measured for each borehole where possible.
 - * Determination of likely future demand for groundwater at the site, including the locus of such demand.
 - * Laboratory analysis of selected water samples from the site so that background "baseline" water chemistry can be determined. This should cover at least those parameters which might be added to the groundwater by the proposed development (e.g. nitrate, phosphate, organics).
 - * A literature search be done to determine whether any data already exists for the site, and to ascertain whether anything not captured in this study has been written about the groundwater in the area in general. This would include a review of recharge mechanisms. More detailed examination of the geology and mineralogy at the site.
-
- *Potential Impacts on Flora and Fauna*

Protected species (fauna and flora) were found on all three sites. Therefore a detailed assessment of the fauna and flora has to be conducted on the selected site. Mitigation measures such as search and rescue exercises on the selected footprint have to be conducted to relocate protected plants and animals. Other detailed mitigation measures such as erosion control, etc. will be highlighted in the specialist report of the selected site within the Environmental Impact Assessment Phase.

- *Potential Visual/Aesthetic Impacts*

The visual impact of the CSP plant is considered to be a significant impact. Therefore, the issues related to the visual impact, will need to be investigated in greater detail during the EIA phase with regards to the farm/footprint that is nominated as preferred. The Visual Impact Assessment will include the following:

- * *Visual Exposure:*

The first step in determining the visual impact of the proposed facilities, is to identify the areas from which the structures would be visible. This is done by performing a viewshed analysis of each facility, taking into account the type of structure, the dimensions, the extent of operations, etc. of the structure itself and its support infrastructure. A detailed digital terrain model, generated from the 5 m contours, is used to determine the visual exposure and to model the topography of the site and its surrounds. Mitigating features, such as vegetation and other existing structures, that might shield the facility, is built into the model to ensure that the results of the visibility analysis is as accurate as possible. Geographical Information

Systems (GIS) software is used to perform the analyses and to overlay relevant geographical data sets in order to generate a visual impact index.

* *Viewer incidence and viewer perception:*

The next GIS layer of information, used to create the visual impact index, is the identification of areas of high viewer incidence (e.g. main roads, residential neighbourhoods, etc), and to quantify the perceived perception of the observers in these identified areas. This is done in order to focus attention on areas where the perceived visual impact of the facility will be the highest and the perception of affected observers will be negative. Related to this data set, is a land use character map, that further aids in identifying sensitive areas and possible critical features (e.g. tourist facilities, national parks, residential areas, etc.), that should be addressed.

* *Observer Proximity*

The observer's proximity to the facility also plays a role in determining the visual impact. Buffer radii are created in order to model the reduced impact over distance and to identify the point where the impact becomes negligible. The type of structure, colour, dimensions, nature of operations, etc. all play a role in the determination of the spatial extent of visual influence of each facility.

* *Visual Impact Index:*

The above datasets, both spatial and alphanumeric entities, are merged in order to calculate the weighted totals of the visual impact indexes. The visual impact index identifies the areas where the likely impact would occur and where the viewer perception would be negative.

* *Severity of impact:*

Once the areas of likely impact have been identified, the severity of impact for each area will be determined by adding non-spatial criteria (should it be relevant) to the equation. An example of non-spatial criteria, that would influence the severity of the visual impact, for instance, could be the potential to mitigate or reduce the impact through the utilisation of vegetation screening. Each area would have to be evaluated according to its own opportunities and constraints for mitigation. Special circumstances that might further aggravate or mitigate the impact of the facilities, would also be identified during this phase of the visual impact assessment.

* *Reporting and map display*

All the data categories, used to calculate the visual impact indexes, and the results of the analyses will be displayed as maps in the accompanying report. This will aid the reader in visualising the perceived visual impact of the proposed power plant facilities and place it in spatial context.

The detailed rationale of the analyses, concluded results of the visual impact assessment and the recommended mitigation measures, for the construction, operational and decommissioning phases of the facilities, will be addressed in the VIA report.

- *Potential Noise Impacts*

Once the preferred farm site is selected, further more detailed analysis of the noise impact situation will need to be undertaken. For this future work, the final footprint of the CSP Plant on the selected farm site, the position of the pump station on the Orange River (if required), the technical details of the CSP Plant and pump station (layout and baseline noise profiles of all equipment), the operating conditions (including traffic) must be known.

- *Social Impact Assessment*

It is recommended that the following detailed studies are undertaken to investigate potentially significant impacts during the Environmental impact assessment phase:

- * *Macro-level impacts*

A more detailed study will be conducted of the macro-economic impacts of the plant.

- * *Creation of employment opportunities*

In order to determine the extent to which the power plant will create employment opportunities for members of surrounding communities, the following information will be obtained from the proponent:

- Labour requirements for construction and operation of the CSP plant and transmission lines;
- Skills requirements for workers; and
- Labour requirements for rehabilitation of the buffer zone surrounding the plant.

The social profile will be used to assess the extent to which the skills required for construction and operation of the CSP plant are available in surrounding communities. This will give an indication of the viability of sourcing required labour from surrounding communities.

- * *Influx of job seekers*

In order to assess the probable numbers of job seekers that may flock into the area once news of the project is disseminated, comparative *post hoc* evaluations will be made of the influx that followed similar developments in

other areas. In order to ensure that these results can be extrapolated to the current study, comparative cases will be selected on the basis of similarity of social profiles (including unemployment rates) of surrounding areas.

* *Increased demand for services*

As was discussed in the previous chapter, the influx of people as a result of the construction and operation of the CSP plant will place significant demands on the local municipality. For instance, it would be necessary to provide housing and services in a short period of time. This situation may necessitate some form of bridging finance to ease the financial burden on the municipality.

In the light of these considerations, it is considered critical that information on the *labour and infrastructure requirements* of the proposed CSP plant be provided to the local municipality of the selected site as soon as possible. This would enable the municipality to set in motion the necessary planning processes.

* *Social problems arising from population increase*

The *potential for conflict* between local residents and newcomers will be assessed on the basis of where construction workers will be sourced from and whether they will be housed on-site. In addition, information will be obtained from municipal officials to determine the current extent of social problems and initiatives to combat them.

* *Social investment*

Information will be obtained from Eskom regarding social investment activities that may be conducted in surrounding communities. These activities will be assessed in terms of their potential to meet community needs and to make a sustainable, long-term difference to the lives of local people.

* *Impacts on safety and daily movement patterns*

Data on predicted increases in *traffic volumes* and *access routes* during construction and operation of the power plant will be obtained from the results of the traffic impact assessment. This information will be used to assess the impact of CSP plant construction and maintenance on the safety and/or daily movement patterns of residents in surrounding communities.

* *Public concerns regarding the project*

Public concerns and perceptions about the project will be assessed by means of consultation with stakeholders. This will be done in collaboration with the public participation team, and the information obtained in this

manner will be used to assess probable responses to the project. The results of the visual impact assessment will also be used to assess the probability that the plant will have a significant impact on the sense of place in surrounding communities.

4.3. Public Participation

4.3.1. On-going Consultation with all I&APs

On-going consultation with key stakeholders (e.g. local authorities, relevant government departments, local business), and other identified I&APs will ensure that I&APs are kept informed regarding the EIA findings and proposed mitigation measures. Networking with I&APs will effectively continue throughout the duration of the project until the closure of the EIA phase. Where required, key stakeholders and I&APs will be engaged on an individual basis. The database and issues trail will be continually updated throughout the process.

4.3.2. Public Involvement

A public meeting will be held to provide the general public with feedback regarding the findings of the EIA, and to provide detail regarding mitigation measures proposed. In accordance with the requirements of the EIA Regulations, the public meetings will be advertised 10 days prior to the event. I&APs registered on the project database will be notified of this public meeting by letter. In addition, key stakeholders will be personally invited to attend a separate key stakeholder workshop, as well as the public meeting, in order to encourage continued participation in the process.

Focus Group meetings will also be held with key stakeholders and I&APs.

Formal minutes of the public meeting, focus group meetings and key stakeholder workshop will be compiled and distributed to the attendees. These proceedings will also be included in the final EIA report.

4.3.3. Social Issues Trail

Issues and concerns raised during the public participation process of the EIA phase will be compiled into an Issues Trail. Proceedings of meetings and comments received will also form part of the document. This record of issues will provide a consolidated list in order to ensure that all issues and concerns raised by I&APs are considered within the EIA process.

4.4. Environmental Impact Assessment Report

The EIA Report will include and address the following:

- a project description (including a description of the proposed activity, plans illustrating the study area and proposed site, and detailed technical details regarding the proposed project);
- a description of the pre-construction environment;
- a description of the public participation process, including the identification of I&APs, a record of the procedures followed, and the perceptions and views of the I&APs regarding the activity;
- a description of environmental (biophysical and social) issues identified and potential impacts of the proposed project on these aspects (i.e. how the environment may be affected as a result of the proposed activity)
- assessment of impacts identified in the Scoping Study which were determined to be significant. These impacts will be assessed in terms of the nature, extent, duration, intensity, severity and probability of the impact occurring;
- conclusions and recommendations regarding the presence of any environmental fatal flaws and recommendations (including mitigation and management measures) regarding the proposed project.

The integration of the specialist studies into a consolidated report will allow for easy assessment of the potential environmental aspects. In order to evaluate the significance of the identified impacts, the following characteristics of each potential impact will be identified:

- the *nature*, which shall include a description of what causes the effect, what will be affected and how it will be affected;
- the *extent*, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional;
- the *duration*, wherein it will be indicated whether the lifetime of the impact will be of a short duration (0–5 years), medium-term (5–15 years), long term (> 15 years) or permanent;
- the *probability*, which shall describe the likelihood of the impact actually occurring, indicated as improbable (low likelihood), probable (distinct possibility), highly probable (most likely), or definite (impact will occur regardless of any preventative measures);
- the *significance*, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the *status*, which will be described as either positive, negative or neutral.

Eskom Holdings Limited have the responsibility to avoid or minimise impacts and plan for their management (in terms of the EIA Regulations), the mitigation of

significant impacts will be discussed and conclusions and recommendations regarding the preferred site drawn.

4.5. Review of Environmental Impact Assessment Report

4.5.1. Public Review of the Draft Environmental Impact Assessment Report

The draft EIA Report will be made available at public places for public review and comment, as per the EIA Regulations. A 30-day period will be allowed for this review process. An advert indicating the availability of this report for public scrutiny will be placed in a regional and local newspaper. I&APs registered on the project database will be notified by the Consultants of the availability of this report and the review period. It is envisaged that this public review period will take place during January 2007.

4.5.2. Authority Review of the Environmental Impact Assessment Report

The EIA report will be submitted to National DEAT and Northern Cape DTEC for their review and comment. The report will be made available to both the Authorities and the public simultaneously (i.e. Begin January 2007). However, after the 30-day public review period, all I&AP comments received from the public will be included within the Final EIA Report and submitted to the Authorities for their review and decision-making.

It is envisaged that the Final EIA report will be submitted to National DEAT and Northern Cape DTEC in early February 2007 for final review and decision-making.

4.6. Record of Decision

On receipt of a Record of Decision (RoD) for the project, the I&APs registered on the project database will be informed of this RoD and its associated terms and conditions. The RoD will also be advertised in local and regional newspapers.

5. WORK PROGRAMME

The Environmental Scoping Study was undertaken over a 6 month time period to allow for a fully comprehensive public participation process. The extended time period allocated for this phase allowed for I&APs to obtain a full understanding of the proposed project, and to raise issues pertaining to the proposed facility, as well as the site selection process. Therefore, the issues pertaining to the project have been identified through a comprehensive consultative process. These issues are to be further investigated by specialists through the EIA. The environmental programme for the EIA and the key dates relevant to the project are outlined in

the table below.

Activity	Proposed Completion Date
Submit Plan of Study for EIA to DEAT	September 2006
Obtain written approval of POS for EIA from DEAT	October 2006
Specialist studies	October – November 2006
Consultation with I&APs	October – January 2006
Compile EIA Report	November – December 2006
Make EIA Report available for public comment	January 2007
Submit draft EIA Report to DEAT	January 2007
Public review period	January 2007
Finalise EIA Report	February 2007
Submit Final EIA Report to DEAT	February 2007
Full Authority review period	February –April 2007
Record of Decision	April 2007