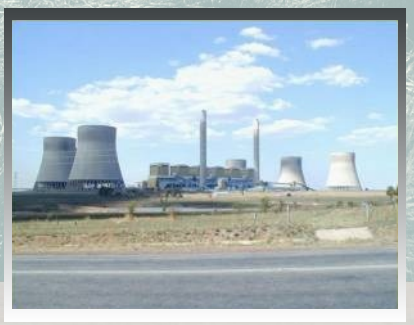
REPORT NO: 4222/401281

PROPOSED COAL-FIRED POWER STATION IN THE WITBANK AREA

FINAL SCOPING REPORT



OCTOBER 2006

Eskom

FOUNDED IN 1958

NINHAM SHAND
CONSULTING SERVICES

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Report No: [4222/401281]

ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED COAL FIRED POWER STATION & ASSOCIATED INFRASTRUCTURE IN THE WITBANK GEOGRAPHICAL AREA

FINAL SCOPING REPORT

OCTOBER 2006

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PROJECT DETAILS

DEAT REF	12/12/20/807
TITLE	Environmental Impact Assessment: Proposed coal fired power station and associated infrastructure in the Witbank geographical area
AUTHOR	Kamal Govender: Ninham Shand
SUBCONSULTANTS	AirShed Planning Professionals Jongens Keet Associates Strategic Environmental Focus Makecha Development Association Ecosun Groundwater Consulting Services Ilitha Riscom Northern Flagship Institution University of the Free State Urban-Econ Development Economists Seaton Thomson and Associates Mark Wood Consultants
CLIENT	Eskom Holdings Ltd (Eskom Generation Division)
REPORT STATUS	Final
NS REPORT NUMBER	4222/401281
SUBMISSION DATE	6 October 2006

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CONTENTS

LIST OF ANNEXURES

ABBREVIATIONS

BID	Background Information Document
DEAT	Department of Environmental Affairs and Tourism (national environmental authority)
ECA	Environment Conservation Act (No. 73 of 1989)
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EIR	Environmental Impact Report
GDACEL	Gauteng Department of Agriculture, Conservation, Environment and Land Affairs
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IEP	Integrated Energy Plan
IEM	Integrated Environmental Management
ISEP	Integrated Strategic Electricity Planning
Km	Kilometres
kV	Kilovolts
kWh	Kilo Watt hour
m	Metres
m^3	Cubic metres
MDALA	Mpumalanga Department of Agriculture and Land Affairs (provincial environmental authority)
MW	Megawatt
NEMA	National Environmental Management Act (No. 107 of 1998)
NERSA	National Energy Regulator of South Africa (formerly National Electricity Regulator)
NIRP	National Integrated Resource Plan
ppm	Parts per million
PPP	Public Participation Process
RoD	Record of Decision
ToR	Terms of Reference
VIA	Visual Impact Assessment

UPDATE SUMMARY

This Update Summary describes the process followed since the Draft Scoping Report (DSR) was made available to interested and affected parties (I&APs) for their comment. It also indicates how the finalisation of the DSR has responded to public and review input and outlines the way forward in the environmental decision-making process.

PROCESS SINCE RELEASING THE DRAFT SCOPING REPORT

The public participation process undertaken during the Scoping Phase was as follows:

- Media notices (in English, Afrikaans, Zulu and Pedi) were placed in local newspapers on 1 September 2006 in order to notify I&APs of the availability of the DSR and to notify them of the Open Houses and Public Meetings that would be held to present the DSR to the public. Please refer to Annexure S for copies of the newspaper adverts;
- The DSR was lodged in the Witbank public library, the Nelspruit public library, the Phola public library, the Johannesburg public library and the Kungwini and Delmas municipal offices on 21 August 2006. Letters were posted to registered I&APs on 21 August 2006 informing them of the lodging of the DSR and notifying them of the Open Houses and Public Meetings. Please refer to Annexure T for a copy of this letter to I&APs; and
- An Open House and Public Meeting was held in Witbank on 4 September 2006. An Open House in Phola and an Open House and Public Meeting at the El Toro Conference Centre, near Kendal, were held on 5 September 2006. The findings of the DSR were presented and an opportunity provided for I&APs to raise concerns and comments.

The comment period ended on 15 September 2006, but submissions up to 26 September 2006 were accepted by those who requested more time. The comments received during the comment period, including those raised during the Public Meetings, are presented and responded to in the second Issues Trail for this project (please refer to Annexure U).

UPDATING OF THE DRAFT SCOPING REPORT

Updating of the DSR to the Final Scoping Report has entailed the following:

- Amending typographical and other insignificant errors that appeared in the DSR;
- Noting changes to the project detail (specifically the acceptance of low NO_x burner technology as a given and the further consideration given to transport of sorbent) that occurred after the compilation of the DSR. These changes are <u>underlined</u> in the main body of this report;
- Updating the Public Participation Process to reflect the latest round of public engagement (also <u>underlined</u>);
- Eliciting comment from the review specialist on the minutes of the Public Meetings and the second Issues Trail (please refer to Annexure V); and
- Appending the following additional annexures, *viz*.

Annexure R: Letter to newly identified landowners;
Annexure S: Newspaper adverts;
Annexure T: Letter to I&APs re lodging of DSR and second round of public engagement;
Annexure U: Issues Trail 2; and
Annexure V: The review of Issues Trail 2.

(Please note that Annexure O has been updated with the written comment received after the release of the DSR and Annexure Q has been amended to reflect an updated list of registered I&APs).

The Draft Scoping Report has been updated to the Final Scoping Report by means of the inclusion of this Update Summary, the incorporation of the above changes in the text of the report, as well as the additional annexures as listed. Significant amendments to the body of the report are indicated by means of underlining in the final version, to enable readers to track the changes.

THE WAY FORWARD

This finalised Scoping Report has been submitted to DEAT for their consideration.

Once they have considered the document and are satisfied that it provides sufficient information, DEAT will accept the Final Scoping Report in writing, allowing the EIA Phase of the EIA process to commence. The findings of the EIA Phase and associated reporting will be presented to the public in due course.

4 October 2006

EXECUTIVE SUMMARY

BACKGROUND AND INTRODUCTION

Eskom Holdings Limited (hereinafter referred to as Eskom) is the primary supplier of electricity in South Africa, providing approximately 95% of the electricity consumed. Eskom applies an Integrated Strategic Electricity Planning (ISEP) process to identify long-term options regarding both the supply and demand sides of electricity provision in South Africa. The ISEP is informed by the White Paper on the energy Policy of the Republic of South Africa (1998), the Integrated Energy Plan (2003) and the National Integrated Resource Plan (2003/ 2004).

The latest ISEP (October 2005) has identified the need for increased base load electricity supply by the year 2010, while peaking generation is being attended to in the shorter term. The National Energy Regulator of South Africa (NERSA) is the regulatory authority responsible for the electricity supply industry in South Africa[1]. In its National Integrated Resource Plan (NIRP), the NERSA has determined that, while various alternative and renewable electricity generation options should be continually investigated, coal should still provide the main fuel source in South Africa. Accordingly, coal-fired power stations will be required for generation capacity expansion during the next 20 years.

As part of the increased electricity supply plan, Eskom proposes constructing a coal-fired power station in the Witbank geographical area. The two sites being investigated occur in the Gauteng and Mpumalanga Provinces (Kungwini Local Municipality and Delmas Local Municipality, respectively). Please refer to Figure 1 at the end of this summary for a locality map. The proposed power station is one of three similar coal-fired power stations being considered by Eskom. The other proposed new coal-fired power stations for which studies are being undertaken are located in the Lephalale area of Limpopo Province and the northern Free State region. The three regions were selected primarily due to the availability of coal.

Ninham Shand Consulting Services has been appointed by Eskom to undertake an Environmental Impact Assessment (EIA) process, in terms of the Environment Conservation Act (No. 73 of 1989), for the activities relating to the proposed coal-fired power station and associated infrastructure in the Witbank area.

PROJECT DESCRIPTION

The project essentially comprises the construction and operation of a coal-fired power station and associated infrastructure. The power station itself would comprise six generating units fuelled by pulverised fuel (coal) with a total nominal electricity generation capacity of approximately 5 400 MW. The exact output of the power station would depend on the technology used and supplier selected. Apart from the power station buildings (including admin buildings, a medical centre, etc.), there would be various ancillary infrastructure including:

[1] The National Energy Regulator of South Africa was established in terms of the Electricity Act, No. 41 of 1987, as amended by the Electricity Amendment Acts of 1994 and 1995.

- A high voltage (HV) yard within the power station precinct ;
- Water supply pipelines (temporary and permanent);
- Water and wastewater treatment facilities;
- Temporary electricity supply (during construction phase);
- Ash disposal systems;
- Coal stockyard and handling facilities;
- General storage and handling facilities (for fuel oil, chemicals etc.);
- Conveying systems for ash and coal;
- Rail and/ or road transport of sorbent;
- Access roads; and
- Dams for the storage of "clean" and "dirty" water;

Electricity generation

Coal, which would be supplied from a coal mine in the vicinity, would be fed into pulverising mills to be crushed into fine dust. This would then be fed into the boilers where it is burnt at high temperatures. The boilers would operate within Original Equipment Manufacturer (OEM) design parameters, the most important of which are pressure and temperature. Each of the six boilers would heat water to produce steam within a pressure and temperature range of 17 MPa – 26 MPa and 535^0C – 566^0C respectively. There is no significant impact on cost across this range although operation at the higher pressure and temperature range allows for increased efficiency (reduction in coal consumption and associated emissions by some 5%). Superheated steam from the boilers would drive turbines coupled to generators, which convert mechanical energy into electrical energy. The generated electricity would be transformed from 22 kV to 400 kV via a generator transformer and thereafter transported from the HV yard into the national grid via HV transmission lines. The transmission lines from the HV yard are not a part of this project and will be the subject of a separate EIA process. Two of the main pollutants arising out of the combustion process would be ash and high-temperature flue gases.

It is anticipated that the proposed power station would occupy an area of approximately 2 500 ha[2]. The footprint (that part of the development that would actually modify the nature of the ground) of the power station would be approximately 1 000 ha. The highest point would be two smoke stacks, each approximately 250 m high. Alternative layouts within each of the proposed sites will be formulated so as to ensure that an optimal configuration is achieved from an environmental and technical perspective.

Alternatives

The Draft Scoping Report identified several project-level alternatives with respect to the construction and operation of the proposed coal fired power station. Strategic-level alternatives, i.e. those alternatives related to the method of electricity generation and the selection of the Witbank area for the proposed power station, fall outside of the scope of this project-level EIA process.

[2] This area assumes that conventional above ground ash dumping would occur.

The following alternatives have been identified to be taken forward to the next phase of the EIA process, where they will be assessed in detail:

- Two alternative sites (refer to Figure 1);
- Layout alternatives within each site;
- Above ground ash disposal, in-pit ashing and back ashing;
- Air pollution abatement technologies;
- Direct and indirect dry cooling systems;
- Alternative alignments for the coal conveyor belt from the coal mine to the proposed power station (these alternatives depend on the location of the coal pithead);
- Alternative means of transporting sorbent to the proposed power station;
- Alternative alignments for the water supply pipeline to the proposed power station; and
- Alternative alignments for the access road between the proposed power station and the existing road network.

IDENTIFIED IMPACTS

Apart from the screening of alternatives, the Scoping Phase has identified several potential impacts that are proposed to be assessed in the next phase. Each of these impacts or issues is proposed to be the subject of a specialist study. Each specialist study would (1) define and describe the existing baseline conditions with respect to each impact; (2) determine what the proposed project (including alternatives) would have on the baseline conditions; and (3) propose mitigation measures to minimise or eliminate potential negative impacts and/ or measures to enhance positive impacts. The following areas of specialisation have been identified for detailed assessment in the next phase:

- Air quality impacts
- Noise impacts
- Visual impacts
- Impacts on terrestrial flora and fauna
- Impacts on aquatic ecosystems
- Groundwater impacts
- Risk assessment
- Heritage impacts
- Impacts on agricultural potential
- Socio-economic impacts
- Planning impacts
- Traffic impact assessment
- Geotechnical constraints

The proposed terms of reference for the specialist studies are detailed in the Scoping Report and associated Plan of Study for EIA. The mitigation measures that are proposed would inform a construction phase Environmental Management Plan (EMP) and an operational phase EMP should the proposed project be authorised by the national Department of Environmental Affairs and Tourism.

THE PUBLIC PARTICIPATION PROCESS

Engagement with Interested and Affected Parties (I&APs) forms an integral component of the EIA process. I&APs will have an opportunity at various stages throughout the EIA process to gain more knowledge about the proposed project and to provide input into the process.

The proposed project was advertised in national, regional and local newspapers in order to make as many people as possible aware of the project and associated EIA process. This was done to elicit comment from and register I&APs from as broad a spectrum of public as possible. Thereafter, the Public Participation Process (PPP) will focus only on registered I&APs and the local communities. English adverts were published in the Sunday Times, the Sowetan and The Star while Afrikaans adverts were published in the Rapport and Die Beeld. Adverts in English, Afrikaans, Zulu and Pedi were published in the local newspapers - the Middelburg Observer, the Highvelder and the Witbank News. All the adverts appeared between 26 April and 5 May 2006.

In addition to the advertising, a Key Stakeholder meeting was held in Witbank to introduce the proposed project and elicit any comments, questions or issues of concern. All responses from the Key Stakeholder meeting and the adverts have been noted and responded to in an Issues Trail.

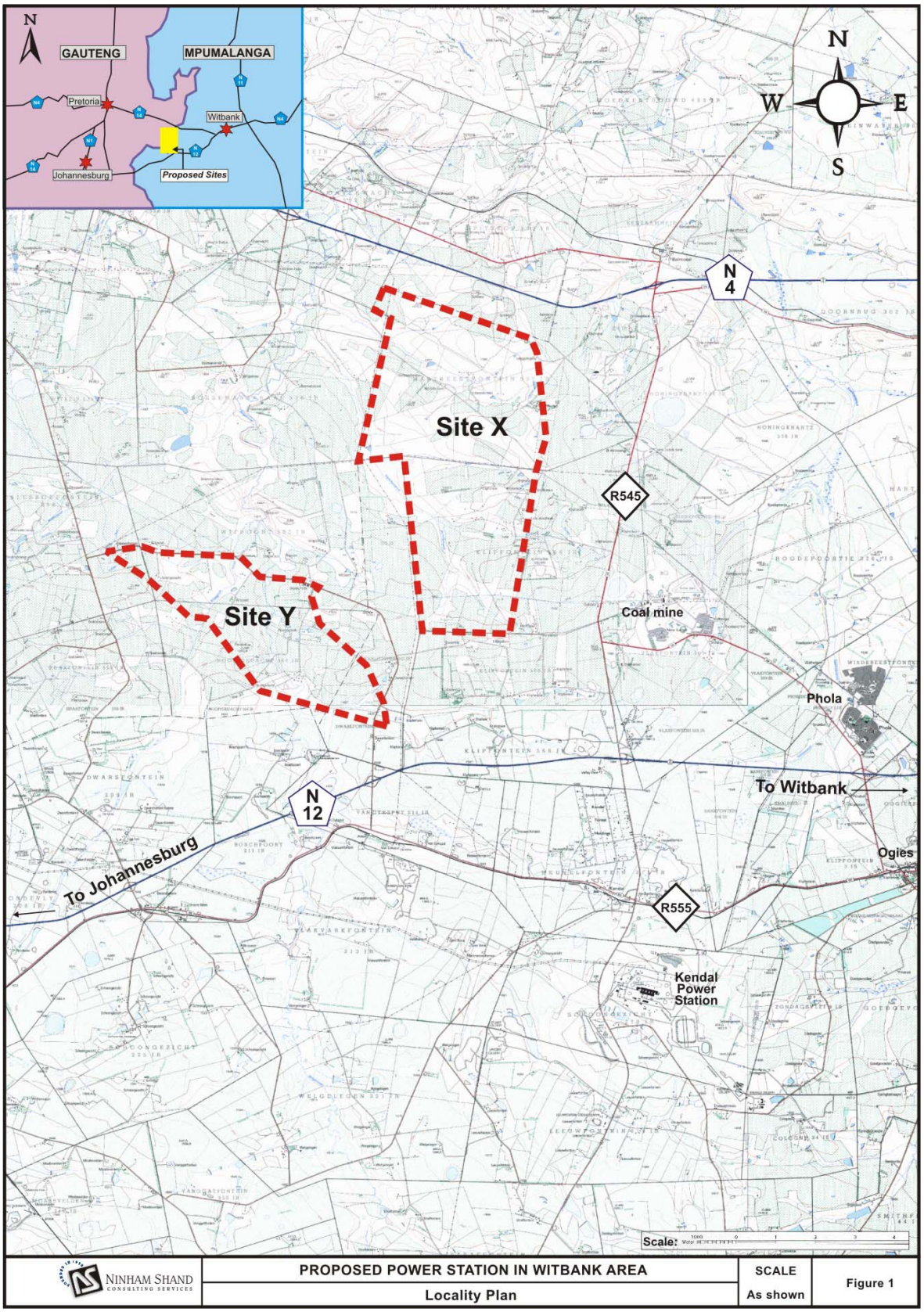
As a result of new sites being selected after the initiation of the PPP, new I&APs as well as previously identified I&APs were brought up to date with the project changes by means of a letter and/ or visit and/ or updated BID and/ or the executive summary of the Draft Scoping Report.

The Draft Scoping Report was released into the public domain in mid August. Open Houses and Public Meetings were held in early September to present the report to the public and registered I&APs. Feedback on the Draft Scoping Report has been incorporated into an Issues Trail and the Draft Scoping Report has now been finalised.

CONCLUSION AND WAY FORWARD

This Final Scoping Report has been informed by the issues and concerns raised by the PPP to date as well as issues raised by authorities, the proponent (Eskom) and by the environmental team. It has presented the context and rationale for the project, described the project components and screened the suite of possible alternatives and environmental implications.

This report will be submitted to DEAT for their consideration.



1 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

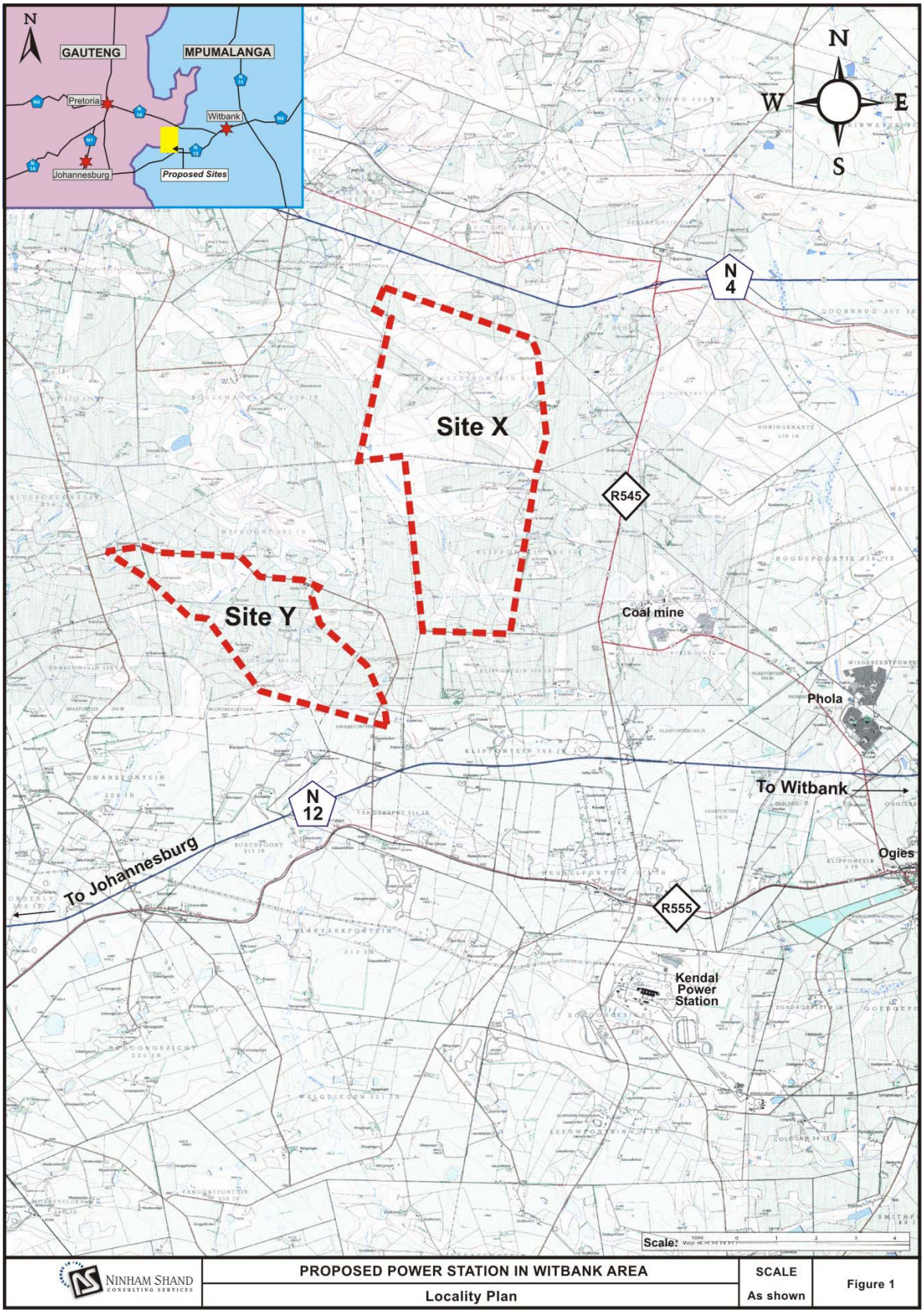
In order to help meet South Africa's growing electricity demand, Eskom proposes constructing a coal fired power station and associated infrastructure[3] in the Witbank geographical area. Figure 1 is a locality map, illustrating the location of the two alternative sites for the proposed power station. In terms of the Environment Conservation Act (ECA) (No. 73 of 1989), the proposed activity requires authorisation from the competent environmental authority before it can be undertaken. In this case the competent authority is the national Department of Environmental Affairs and Tourism (DEAT). DEAT's decision would be based on the outcomes of an Environmental Impact Assessment (EIA) process, required by the ECA. This report serves to document the Scoping Phase of the EIA process (the EIA process and sequence of documents are illustrated in Figure 2.). The purpose of this report is to outline the legal and policy framework and national electricity situation, to comprehensively describe the proposed project and its alternatives, to describe the biophysical and socio-economic context of the proposed power station, to describe the Public Participation Process (PPP) undertaken to date and the way forward, and most importantly to identify potential impacts and the range of project alternatives that require further study in the EIA Phase.

To date, the EIA process has unfolded as follows:

- Submission of an application form to the Mpumalanga Department of Agriculture and Land Affairs (MDALA, the provincial environmental authority) and to DEAT. This represented the formal initiation of the EIA process;
- Submission of a Plan of Study for Scoping (PoSS) to DEAT;
- Distribution of Background Information Documents (BIDs) to alert potential Interested and Affected Parties (I&APs) to the initiation of this EIA process;
- Placing adverts in national, regional and local newspapers notifying the broader public of the initiation of the EIA and inviting them to register as I&APs; and
- Meeting with key stakeholders (affected landowners, government authorities and NGOs).

The Scoping Phase will be followed by the EIA Phase, which will culminate in a comprehensive document, the Environmental Impact Report (EIR).

[3] A separate EIA will be undertaken for transmission lines that will be required to feed electricity into the national electricity grid. With respect to fuel supply, an EIA is currently being undertaken for the coal mine proposed to supply the coal.



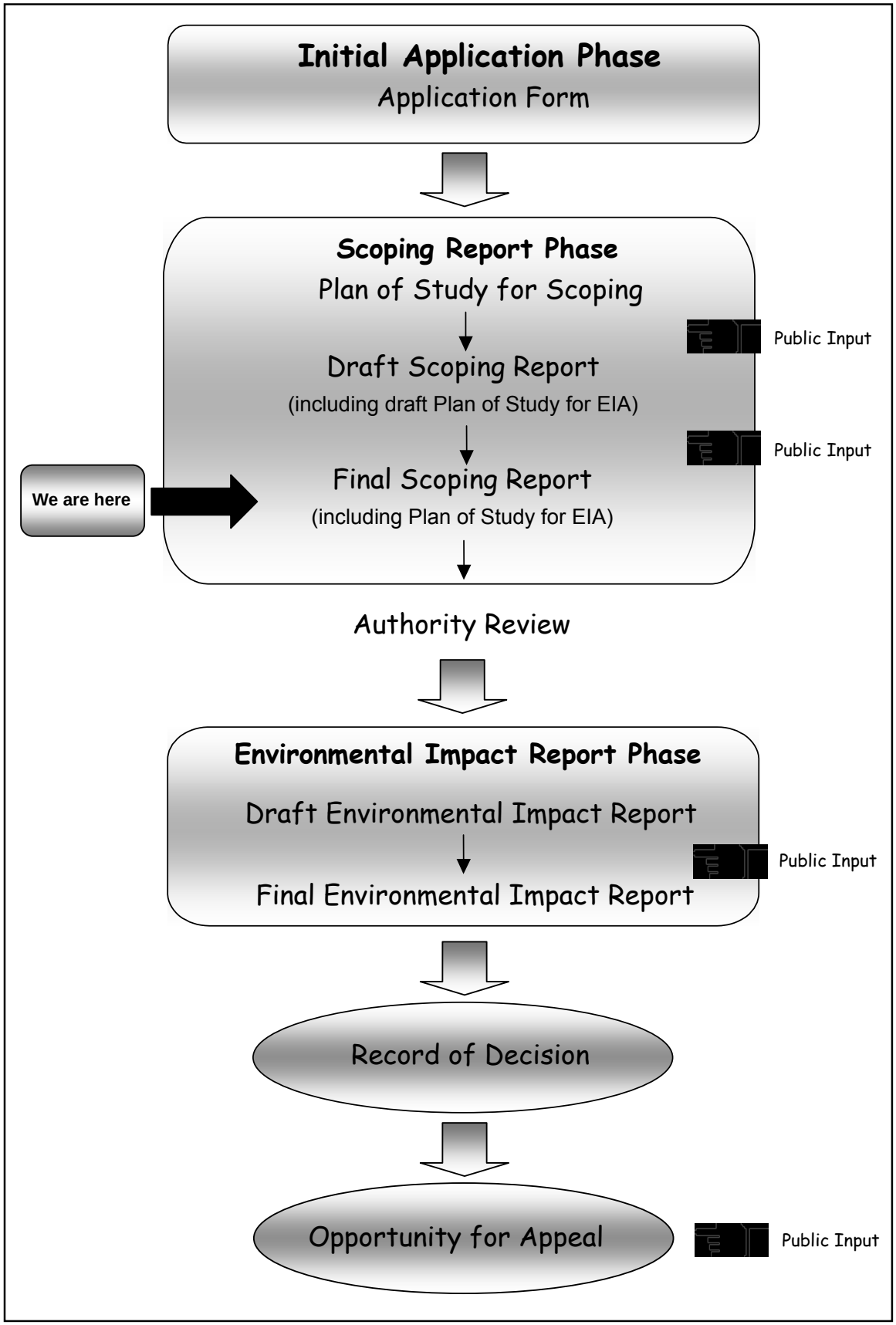


Figure 2: The EIA process

1.2 POLICY FRAMEWORK

Eskom is the primary supplier of electricity in South Africa, providing approximately 95% of the electricity consumed. The decision to expand Eskom's electricity generation capacity was based on national policy and informed by on-going strategic planning undertaken by the national Department of Minerals and Energy (DME), the National Energy Regulator of South Africa (NERSA) and Eskom. The hierarchy of policy and planning documentation that reflects this state of affairs is illustrated by Figure 3 and described below.

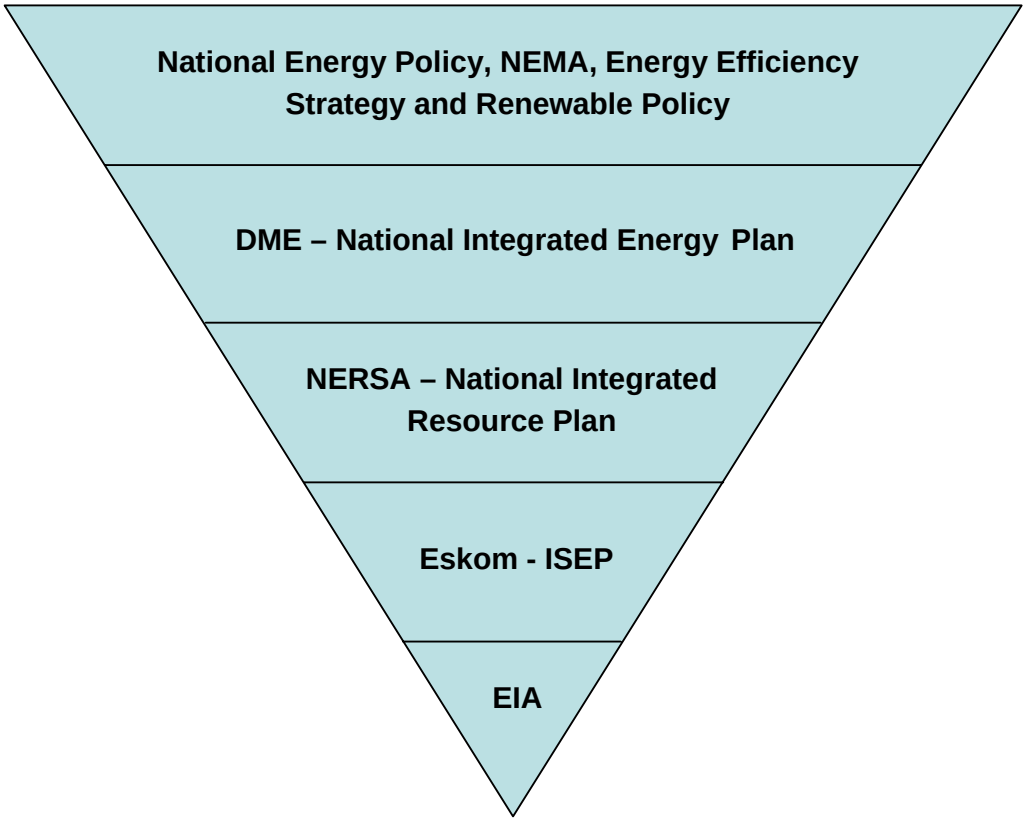


Figure 3: Hierarchy of policy and planning documents

1.2.1 White Paper on the Energy Policy of the Republic of South Africa - 1998

Development within the energy sector in South Africa is governed by the White Paper on the Energy Policy, published by DME in 1998. This White Paper sets out five objectives for the further development of the energy sector. The five objectives are as follows:

- Increased access to affordable energy services;
- Improved energy governance;
- Stimulating economic development;
- Managing energy-related environmental and health impacts; and

- Securing supply through diversity.

Furthermore, the Energy Policy identified the need to undertake an Integrated Energy Planning (IEP) process in order to achieve a balance between the energy demand and resource availability, whilst taking into account the health, safety and environmental[4] parameters. In addition, the policy identified the need for the adoption of a National Integrated Resource Planning (NIRP) approach to provide a long-term cost-effective resource plan for meeting electricity demand, which is consistent with reliable electricity supply and environmental, social and economic policies.

1.2.2 Integrated Energy Plan (IEP) – 2003

DME commissioned the IEP to provide a framework in which specific energy policies, development decisions and energy supply trade-offs can be made on a project-by-project basis. The framework is intended to create a balance in providing low cost electricity for social and economic development, ensuring a security of supply and minimising the associated environmental impacts.

The IEP projected that the additional demand in electricity would necessitate an increase in electricity generation capacity in South Africa by 2007. Furthermore, the IEP has concluded that, based on energy resources available in South Africa, coal will be the primary fuel source for the current expansion period.

1.2.3 National Integrated Resource Plan (NIRP) – 2003/2004

In response to the White Paper's objective relating to affordable energy services, the National Electricity Regulator (now NERSA) commissioned a NIRP. The objective of the NIRP is to determine the least-cost supply option for the country, provide information on the opportunities for investment into new power stations and evaluate the security of supply.

The national electricity demand forecast took a number of factors into account. They are:

- A 2.8% average annual economic growth;
- The development and expansion of a number of large energy-intensive industrial projects;
- Electrification needs;
- A reduction in electricity-intensive industries over the 20 year planning horizon;
- A reduction in electricity consumers – NIRP anticipates people switching to the direct use of natural gas;
- The supply of electricity to large mining and industrial projects in Namibia and Mozambique; and
- Typical demand profiles.

The outcome of the NIRP determined that while the coal-fired option of generating electricity would still be required over the next 20 years, additional energy generation facilities would be required by 2007.

[4] Environmental parameters include economic and social aspects.

1.2.4 Eskom Integrated Strategic Electricity Planning (ISEP) – 2005

Eskom applies an Integrated Strategic Electricity Planning (ISEP) process to identify long-term options regarding both the supply and demand sides of electricity provision in South Africa. The most recently approved ISEP plan (October 2005) identifies the need for increased peaking[5] supply by about 2006/7 and base load[6] by about 2010. Figure 4 below illustrates Eskom's "project funnel", which shows the range of supply options being considered by Eskom to meet the increasing demand for electricity in the country[7]. There are currently 34 projects in the project funnel ranging from research projects to new-build projects. Research projects include a demonstration solar power project, underground coal gasification and the pebble bed modular reactor. Three 'mothballed' stations, viz. the Camden, Komati and Grootvlei power stations, are currently being returned-to-service, and are therefore reflected in the 'build' portion of the funnel diagram.

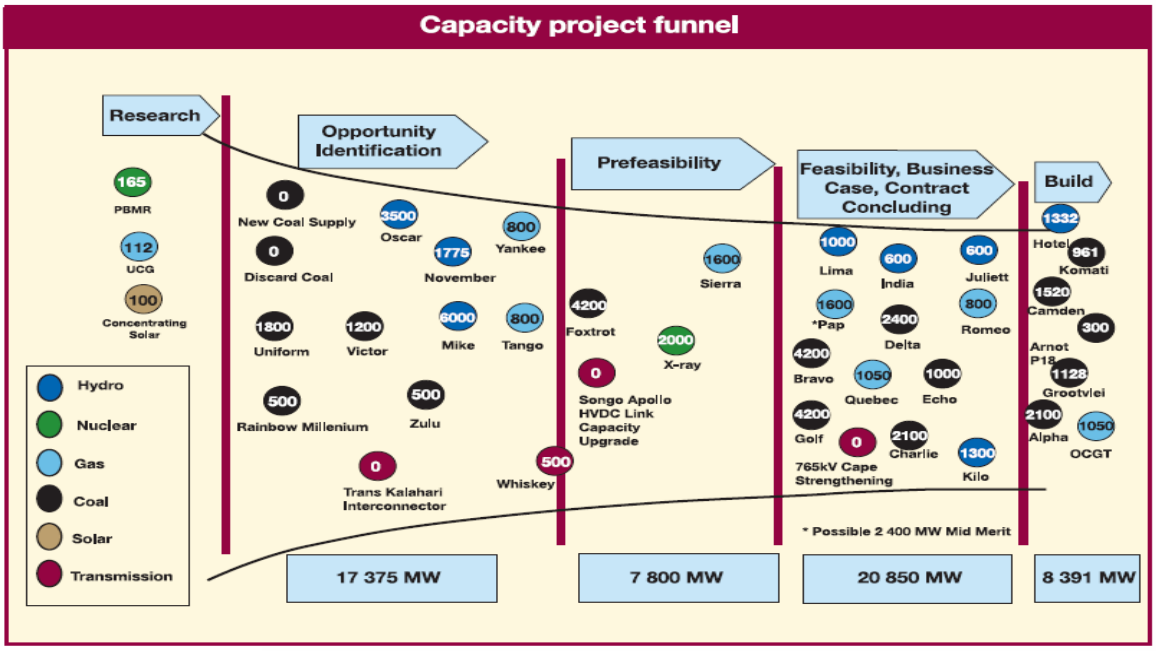


Figure 4: Project funnel

In addition, three new coal-fired power stations are being considered; this one in the Witbank area, one in the Lephalale area and one in the northern Free State. These three new power stations are not alternatives. Should the relevant authorisations be obtained, all three power stations will be required in order to meet future electricity demand. The selection of the Witbank geographical area for the location of a new coal-fired power station was based primarily on availability of coal. The selection of the Witbank geographical area was undertaken as part of Eskom's forward planning and, accordingly, will not be assessed in this project-level EIA.

[5] Peaking refers to the periods between 07:00 and 09:00 in the mornings and 18:00 and 20:00 in the evenings when electricity use is at its greatest.
[6] Base load refers to the electricity generated to meet the continuous need for electricity at any hour of day or night.
[7] Please note that within each category (e.g. the "prefeasibility" category) of the funnel, the position of a project relative to other projects within that category is not an indication of its state of relative progress.

1.2.5 Site Selection Report

The Site Selection Report documents the site selection process that was undertaken, including the methodology followed and results of the selection process. Please refer to Annexure A for the Site Selection Report.

Initially, nine potential sites in the Witbank geographical area were identified. After a preliminary screening, this was reduced to eight potential sites (Sites 2 to 9). These eight sites were inspected (by air and on the ground) and then evaluated by means of a multi-criteria decision analysis tool described in the Site Selection Report. Ninham Shand, the responsible Eskom personnel and key specialists applied the decision-making tool to the eight sites, resulting in each site being ranked in relation to each of the others. The ranking of each site with respect to six criteria as well as the weighting attached to each criterion was workshopped and agreed to by all the participants. The outcome of the workshop was the following prioritisation of sites (most preferred to least preferred):

- Site 6;
- Site 4;
- Site 5;
- Site 7;
- Site 8;
- Site 3;
- Site 9;
- Site 2;

Figure 5 is a graphic presentation of the relative ranking of each site. As can be seen, Site 6 is the most preferred site, with Sites 4 and 5 following. Sites 3, 7 and 8 are comparable but are not real contenders. Sites 9 and 2 are shown to be relatively unfeasible.

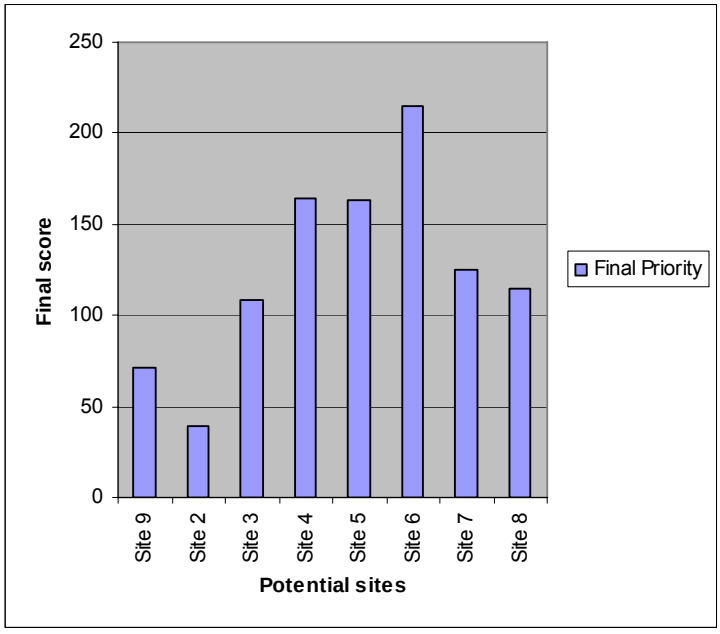


Figure 5: Graph of the final prioritisation of potential sites.

Based on the findings of the site selection process, it was decided to take two sites into the EIA. Strictly speaking, the two most preferred sites are Site 6 and Site 4. However, given that Sites 4 and 5 received similar rankings, and are immediately adjacent, it was considered prudent to merge Sites 4 and 5 into a single site – allowing more consideration to be given to the orientation of the proposed power station within it. Therefore the two sites that were eventually selected to be addressed in the EIA were Site (4+5) and Site 6, hereinafter referred to as Site X and Site Y respectively.

These two sites are being taken forward into the EIA Phase of this EIA process.

The Site Selection Report forms the point of departure for the EIA process. The decision to construct a new coal-fired power station in the Witbank geographical area is described in Section 1.2.4 above. The ratification of the Site Selection Report by the review consultant will occur as part of the review of the Draft Scoping Report (Please refer to the review report in Annexure B).

1.3 LEGAL REQUIREMENTS

In order to protect the environment and ensure that this development is undertaken in an environmentally responsible manner, there are three significant pieces of environmental legislation that focus this assessment. They are as follows:

1.3.1 The Environment Conservation Act

Section 21 of the Environment Conservation Act (No. 73 of 1989), per Government Notice R1182 of September 1997, as amended, contains a schedule of activities that may have substantial detrimental effects on the environment and which require authorisation from the competent environmental authority. The nature of the proposed development includes activities listed in this schedule. The primary trigger is:

"*The construction, erection and upgrading of facilities for commercial electricity generation with an output of at least 10 megawatts and infrastructure for bulk supply*".

Accordingly, the proposed power station and associated infrastructure require authorisation from the competent environmental authority based on the findings of the EIA process as described in Regulation 1183. Given the fact that the study area is located in both Mpumalanga and Gauteng Provinces and the fact that the applicant is Eskom, a State Owned Enterprise, the provincial environmental departments are required in terms of Regulation 1183 to refer the matter to the national department, i.e. DEAT. Hence, DEAT is the competent authority for this EIA process.

The proposed project may entail various other actions that would also be construed as scheduled activities in terms of Regulation 1182 and thus require authorisation. These include:

- *"The construction, erection or upgrading of-*

  - *with regard to any substance which is dangerous or hazardous and is controlled by national legislation-*
    - *infrastructure…for the transportation of any such substance; and*
    - *manufacturing, storage, handling, treatment or processing facilities for any such substance;*
  - *roads, railways, airfields and associated structures;*
  - *structures associated with communication networks, including masts, towers and reflector dishes;*
  - *schemes for the abstraction or utilisation of ground or surface water for bulk supply purposes;*
  - *sewerage treatment plants and associated infrastructure."*
- "*The change of land use from-*
  - *agricultural or zoned undetermined use or an equivalent zoning to any other land use."*
- *"The disposal of waste as defined in Section 20 of the Act…"*
- *"Scheduled processes listed in the Second Schedule of the Atmospheric Pollution Prevention Act."*
- *"canals and channels, including structures causing disturbance to the flow of water in a river bed, and water transfer schemes between water catchments and impoundments".*

While there are other approvals (e.g. DME approval for borrow pits to provide material for the construction of access roads) required for this development, construction can only proceed if an environmental approval is granted according to the ECA. This study is therefore in accordance with Sections 21, 22 and 26 of the ECA.

1.3.2 The National Environmental Management Act

The National Environmental Management Act (No. 107 of 1998) states that the principles of Integrated Environmental Management (IEM) should be adhered to in order to ensure sustainable development. A vital underpinning of the IEM procedure is accountability to the various parties that may be interested in or affected by a proposed development. Public participation is a requirement of the IEM procedure, in terms of the identification of potentially significant environmental impacts during the Scoping Phase. The IEM procedure aims to ensure that the environmental consequences of development proposals are understood and adequately considered during all stages of the project cycle, and that negative aspects are resolved or mitigated and positive aspects enhanced.

Furthermore, Section 28(1) states that "every person who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring". If such pollution cannot be prevented then appropriate measures must be taken to minimise or rectify such pollution. Eskom therefore has the responsibility to ensure that the proposed activity as well as the EIA process conforms to the principles of the National Environmental Management Act. In developing the EIA process Ninham Shand have been cognisant of this need, and accordingly the EIA process undertaken here has been informed by the underlying National Environmental Management Act principles.

The NEMA EIA regulations, which replace the ECA EIA regulations have been promulgated and came into effect on 3 July 2006. However, according to Section 84 (1) of the transitional provisions of the Regulations, this EIA process, having commenced in terms of the ECA, will be dealt with entirely under that legislation. Nonetheless, this EIA process has been designed to satisfy the principles of NEMA.

1.3.3 The Constitution of South Africa

The Constitution of South Africa (No. 108 of 1996) states that everyone has a right to a non-threatening environment and requires that reasonable measures are applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development. These principles are embraced in NEMA and given further expression.

1.3.4 Legal requirements in terms of other Acts

In addition to the ECA and NEMA, the following Acts may have some bearing on the proposed activities:

- The National Heritage Resources Act (No. 25 of 1999): The proposed power station and associated infrastructure comprises certain activities (e.g. changing the nature of a site exceeding 5 000 m^2) that require authorisation in terms of this Act. The requirements of the National Heritage Resources Act will be addressed as an element of this study. Section 38 (8) of the Act states that if heritage considerations are taken into account as part of an application process undertaken in terms of the ECA, there is no need to undertake a separate application in terms of the national Heritage Resources Act. The Gauteng and Mpumalanga Heritage Resource Agencies will be provided with all relevant documentation, since they have a statutory role to play in the decision-making process, acting as commenting authorities.

- The National Water Act (No. 36 of 1998): Comment will be sought from the Department of Water Affairs and Forestry, which will then be forwarded to DEAT to consider during their decision-making process. Section 22 (1) of the Act stipulates the conditions under which water use is permitted. Cognisance of these conditions, and any approvals that may be required in terms of these conditions, will be taken as part of the broader project planning and fall outside the scope of this EIA.

- The Minerals and Petroleum Resources Development Act (No. 28 of 2002): Comment will be sought from the Department of Minerals and Energy, which will then be forwarded to DEAT to consider during their decision-making process. In order to mine borrow pits to provide material for roads, Eskom will need to apply to DME for a Mining Permit. This application will be outside of the current EIA process.

- The Air Pollution Prevention Act (No. 45 of 1965): As the proposed activities would entail emissions to the atmosphere, this Act requires that a permit application be submitted to the Chief Air Pollution Control Officer by Eskom. However, this Act is scheduled to be entirely repealed by the National Environmental Management: Air Quality Act (see below).

- National Environmental Management: Air Quality Act (No. 39 of 2004): This Act was promulgated in February 2005 but has but has not yet come fully into force. It aims to reform current air quality law and provide national standards regulating the monitoring, management and control of air quality, while at the same time promoting justifiable economic and social development. It requires that Eskom applies for an atmospheric emissions licence. However, in the transition period before this Act is completely enacted, Eskom can apply for a registration certificate in terms of the Air Pollution Prevention Act.

1.3.5 The Kyoto Protocol

The United Nations Framework Convention on Climate Change (UNFCCC) and the subsequent Kyoto Protocol is an attempt to address global warming. South Africa ratified the Convention on 29 August 1997. The Kyoto Protocol was adopted at a Conference of the Parties to the UNFCCC in Kyoto, Japan in December 1997. The conference resulted in a consensus decision to adopt a protocol under which industrialised countries will reduce their combined greenhouses gas emissions by at least 5% compared to 1990 levels in the period 2008 to 2012.

In developing the Kyoto Protocol, the need to promote sustainable development was recognised. This means implementing policies and measures to, among others, enhance energy efficiency, protect and enhance sinks and reservoirs of greenhouse gases, promote sustainable forms of agriculture, increase the usage of new and renewable forms of energy and of advanced, innovative and environmentally sound technologies. The Kyoto Protocol is a legally binding instrument. In response, South African policies are starting to place emphasis on cleaner technology and production, and a shift to sustainable development.

Eskom works closely with DEAT to realise the strategic objectives, principles and proposals of the national Climate Change Response Strategy. The strategy is a broad framework for formulating, implementing and regularly updating national and, where appropriate, regional programmes to mitigate climate change.

1.4 THE BRIEF

Eskom has appointed Ninham Shand as the independent environmental consultant to assess the environmental impacts of the proposed development. In addition, the appointment is to ensure that the proponent complies with the legislated requirements of the EIA mentioned in Section 1.3 above. As per the legislated EIA process (specifically Sections 21, 22 and 26 of the ECA and Sections 4 to 8 of Regulation 1183), the independent environmental consultant would undertake the following:

- Produce a Plan of Study for Scoping (PoSS);
- Undertake a scoping process in line with the PoSS, to determine the scope of all environmental aspects that may be impacted upon;
- Produce a Plan of Study for EIA (PoSEIA);
- Undertake an assessment process, in line with the PoSEIA, to evaluate potential impacts; and
- Submit an EIR to the competent environmental authority for decision.

Prior to the Draft Scoping Report being finalised and lodged in the public domain it was determined that the initial site screening that formed the point of departure for the EIA was inadequate to meet best practice principles. Accordingly the brief was altered to include the undertaking of a new site selection process. Please refer to Section 1.2.5 and Annexure A for a description of the process and its outcomes.

A public participation process is being undertaken throughout this study, to ensure that I&APs are given an opportunity to participate and to ensure that issues of importance to them are addressed. This is discussed in more detail in Chapter 4 of this report.

1.5 STUDY APPROACH

To initiate the EIA process, pre-application meetings were held with MDALA and DEAT during which the environmental process to be followed was presented. It was confirmed that DEAT would be the competent authority, given the fact that Eskom is a State Owned Enterprise and that the project would have implications that crossed provincial boundaries. After the pre-application meetings, the MDALA Application Form and the Plan of Study for Scoping were submitted to DEAT. The submission of the Application Form served as the formal application for the project and initiation of the EIA process. The Plan of Study for Scoping, which describes in detail the approach to be followed in the Scoping Phase, has been accepted by DEAT (please refer to Annexure C).

The site selection process, which was undertaken after the initiation of discussions with DEAT and MDALA, resulted in the selection of a site that falls within the Gauteng Province. Discussions with the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL) confirmed the fact that GADCEL, like MDALA, would act as a commenting authority, while DEAT would remain as the competent authority.

The Draft Scoping Report has now been finalised in light of public engagement and submitted to DEAT. The EIA Phase follows the Scoping Phase.

1.6 ASSUMPTIONS AND LIMITATIONS

This EIA process is limited to the proposed power station and associated infrastructure and will be undertaken in terms of the Environment Conservation Act (No.73 of 1989). For various reasons, outlined in the following sections, the EIA study will only consider the proposed activities and alternatives as discussed in Chapters 3 and 4. The following issues will not be assessed in this EIA process:

- Different technologies for generating electricity;
- Alternative regional locations for proposed power station;
- Transmission lines from the proposed power station;
- Coal mining activities;
- Sorbent mining activities; and
- The Vaal River Eastern Sub-system Augmentation Project.

It is assumed that all information received from Eskom is based on the latest available data and is as accurate as possible.

1.7 ENVIRONMENTAL TEAM

Ninham Shand has been appointed as the lead consultant to conduct the EIA. The professional team, which has been assembled by Ninham Shand, and their area of responsibility, is as follows:

Ninham Shand (Lead Consultant)	EIA process, PPP & co-ordination
	Geotechnical specialist
	Traffic management specialist
AirShed Planning Professionals	Air quality specialist
Strategic Environmental Focus	Visual impact specialist
Jongens Keet Associates	Acoustic specialist
Makecha Development Association	Terrestrial ecology specialist
Ecosun	Aquatic ecology specialist
Groundwater Consulting Services	Groundwater specialist
Ilitha RisCom	Risk specialist
Northern Flagship Institution	Heritage impact specialist
University of the Free State	Agricultural specialist
Urban-Econ Development Economists	Socio-economic specialist
Seaton Thomson Associates	Planning specialist
Mark Wood Consultants	EIA Review specialist

Ninham Shand has extensive experience in assessing the environmental implications of developments and has undertaken in excess of 300 projects in terms of the requirements of Regulations 1182 and 1183 of the Environment Conservation Act (No 73 of 1989), including compiling Application Forms and Scoping Checklists, Scoping Reports and Environmental Impact Assessment reports. These projects have dealt with fields as diverse as water-related projects, purification, heavy engineering, transportation and roads, and urban and rural development. Accordingly, Ninham Shand has a good understanding of the environmental requirements of a range of activities and has established working relationships with local, regional and national environmental authorities.

It should be noted that Ninham Shand, as lead consultant in the environmental team, are independent and have no interests in downstream activities arising out of the proposed project.

The Project Director, Mr Mike Luger, the Project Manager, Mr Brett Lawson and the Public Participation Co-ordinator, Ms Karen Shippey are certified environmental assessment practitioners. This means that they have been certified by Environmental Assessment Practitioners of South Africa as competent to undertake Environmental Impact Assessment Processes and are bound by a code of conduct. Furthermore, Mr Lawson and Ms Shippey are also registered as Professional Natural Scientists with the South African Council for Natural and Scientific Professionals.

Mr Mark Wood's role in the project is to review the EIA process being undertaken, to ensure that it accords with local and international best practice. In this regard Mr Mark Wood has reviewed the Draft Scoping Report and provides his comments in Annexure B. The review indicates that, while the Draft Scoping Report does have room for improvement, it does not contain any fatal flaws and is essentially a sound document. Mr Mark Wood's comments will be given effect during the finalisation of the Scoping Report.

1.8 REPORT STRUCTURE

This report is structured as follows:

Chapter One	*Provides the introduction, policy and legislative requirements and background to the study*
Chapter Two	*Describes the project components*
Chapter Three	*Describes the selection and screening of alternatives*
Chapter Four	*Describes the study area*
Chapter Five	*Discusses the identified impacts*
Chapter Six	*Describes the public participation process*
Chapter Seven	*Concludes the report and describes the way forward*

2 PROJECT DESCRIPTION

2.1 PROPOSED ACTIVITIES

The project comprises the design, construction, commissioning and operation of a coal-fired power station with its associated infrastructure. The power station itself would comprise six boiler/ turbine units (each generating approximately 900 MW of electricity) fuelled by pulverised fuel (coal), with a total nominal electricity generation capacity of approximately 5 400 MW. The station capacity rating is dependant on the technology selected, which is based on a technical and commercial evaluation of various Original Equipment Manufacturers (OEM). Accordingly, the specifications (dimensions, temperatures, pressures, etc.) presented in this chapter are indicative only and are intended to give the reader a sense of the proposed project. The final power station specifications would be similar to those presented here, but not necessarily exactly the same.

Apart from the power station buildings (including admin buildings, a medical centre, etc.), there would be various ancillary infrastructure including:

- A high voltage (HV) yard within the power station precinct;
- Water supply pipelines (for both construction and operation);
- Water and wastewater treatment facilities;
- Ash disposal systems;
- Ash and coal conveyance systems;
- Rail and/ or road transport of sorbent;
- Coal stockyard and handling facilities;
- General storage and handling facilities (for fuel oil, chemicals etc.);
- Electricity supply during the construction phase;
- Access roads; and
- Dams for the storage of “clean” and “dirty” water; and

2.2 PROPOSED COAL FIRED POWER STATION

Figure 6, below, illustrates the process by which electricity is produced.

The power station would be fuelled by coal, which would be supplied by the coal resource located adjacent to the decommissioned Wilge power station. The coal resource is discussed in more detail in Section 2.2.4.

Approximately 55 000 tons of coal per day (approximately 16 million tons/ year) would be transported by conveyor belt from the colliery to the coal stockyard within the power station precinct. From the coal stockyard, conveyor belts would transport the coal to pulverising mills, which are housed in the boiler section of the plant (each boiler unit is typically associated with five mills). Coal will be crushed into fine dust (pulverised fuel, approximately 300 µm in diameter) before being fed into the boiler units. Typical boiler dimensions are 18 m x 18 m x 110 m high, with much of their surface areas being encompassed by water-filled pipes.

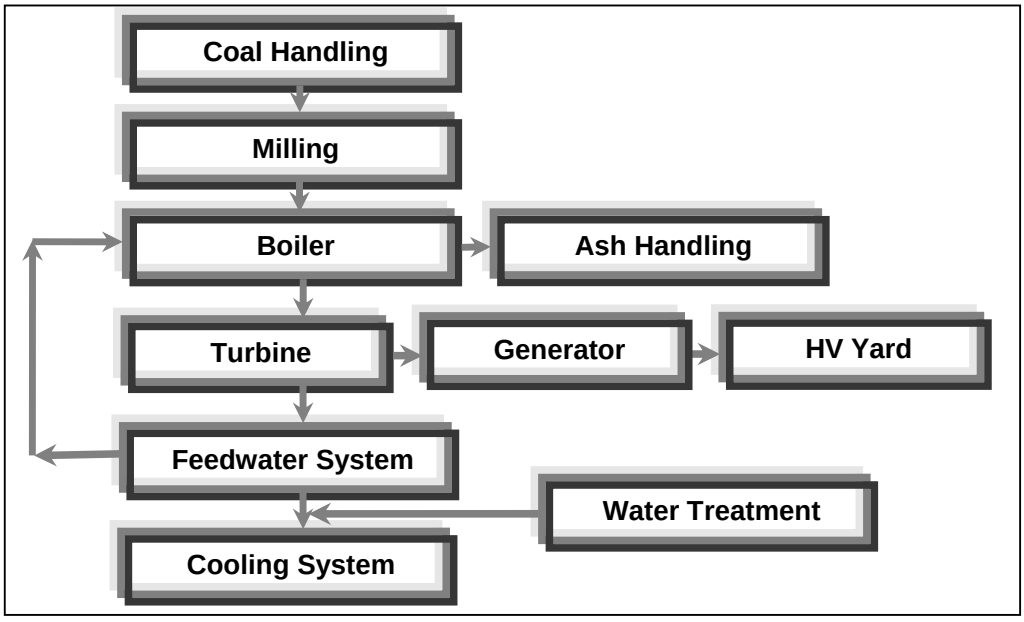


Figure 6: Process flow diagram of a typical coal fired power station

The boilers would operate within OEM design parameters, the most important of which are pressure and temperature. Each of the six boilers would heat water to produce steam within a pressure and temperature range of 17 MPa – 26 MPa and 535^0C – 566^0C respectively. There is no significant impact on cost across this range although operation at the higher pressure and temperature range allows for increased efficiency (reduction in coal consumption and associated emissions by some 5%). Superheated steam from the boilers would drive turbines coupled to generators, which convert mechanical energy into electrical energy. The generated electricity would be transformed from 22 kV to 400 kV via a generator transformer and thereafter transported from the HV yard by HV transmission lines into the national grid. The transmission lines from the HV yard are not a part of this project and will be the subject of a separate EIA process.

The low pressure steam exiting the turbines is condensed into liquid and returned to the boiler via the feedwater system from where the process repeats itself

Two by-products of combustion are high temperature flue gases and ash. Ash handling is addressed in more detail in Section 2.2.2 below. Emissions from the power station are discussed in Section 2.2.3.

2.2.1 Power station extent and layout

It is anticipated that the proposed power station would occupy an area of approximately 2 500 ha[8]. However, the footprint (that part of the development that would actually modify the nature of the ground) of the power station would be approximately 1 000 ha. The highest point would be two flue gas stacks, each approximately 250 m high. Alternative site layouts will be

[8] This area assumes that conventional above ground dumping will occur. If either in-pit or back ashing occurs, less area will be required.

formulated so as to ensure that the optimal configuration is achieved from an environmental and technical perspective. Such a configuration would be within the boundary of the site allowed for the proposed power station. Figure 7 below illustrates a typical power station layout (based on existing Kendal power station layout).

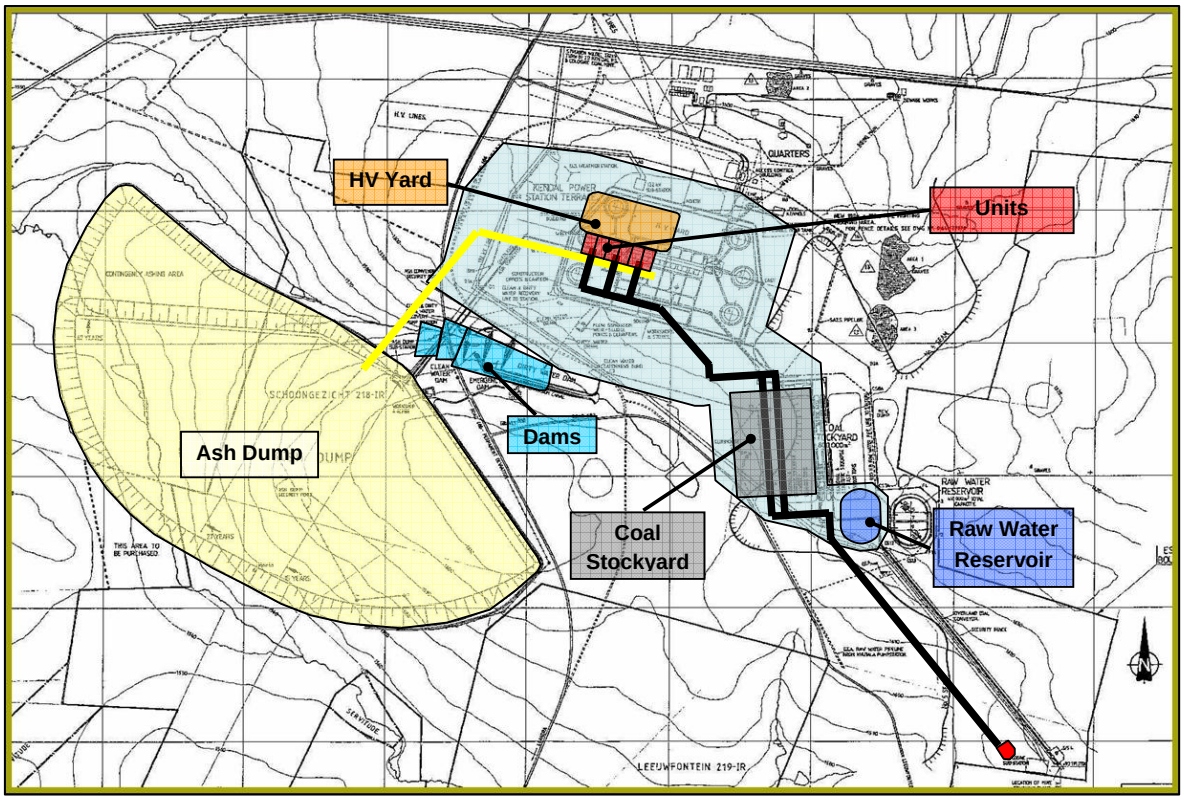


Figure 7: Typical power station layout

The power station layout will be influenced by the type of cooling system implemented – either direct dry cooling or indirect dry cooling (please refer to Section 3.3.7 for an explanation of the alternative cooling systems). Photos 3 and 4 give an idea of what the proposed power station would look like if direct dry cooling were implemented. Photo 5 shows a typical indirect dry cooled power station with conventional cooling towers. Photo 6 is a close up of a cooling tower with typical height and base width of 165 m.

Photos 3 and 4: A typical direct dry cooled power station, without cooling towers

Photos 5: A typical indirect dry cooled power station, with cooling towers

Photo 6: Close-up of a typical cooling tower.

Depending on the OEM, it may be possible to consolidate the power station layout by inserting the smoke stacks into the cooling towers. However, it is too early at this stage to be definitive about this option.

2.2.2 Ash handling

At full load each generating unit would produce ash at a rate of approximately 110 tons/ hour. Ash produced comprises boiler bottom (coarse) ash and extremely fine, powder-like, fly ash. Coarse ash would be extracted from the bottom of the boiler unit, while fly ash would be extracted through the top of the boiler together with the flue gas. After separation from the flue gas by means of flue gas cleaning technology (typically either fabric filters or electrostatic precipitators), the fly ash would be transferred for conditioning and transported to the ash dump.

In a typical dry ash handling system (as proposed for this project) the ash handling facility would comprise intermediate silos, which would serve as an ash storage buffer. Fly ash would be conditioned with approximately 8 to 15% water to ensure that it is not dispersed by wind during transfer to the ash dump. Boiler bottom ash has a sufficient water content and mass to negate the need for conditioning and can therefore be deposited directly onto a conveyor belt for transport to the ash dump. The conditioned fly ash from the silos would be combined with the coarse ash downstream of the ash conditioning facility for transport to the ash dump.

The proposed power station would employ one, or a combination of, three alternatives methods for ash disposal, viz. above-ground ash dumping, in-pit ashing or back ashing. These are described in Section 3.3.4.

Currently approximately 5% of the ash produced at some existing power stations is used in the cement industry and a smaller amount in various other products. In addition, Eskom runs a research programme that looks into alternative uses for ash. Ashing above-ground is, by a large margin, the primary manner in which ash is disposed of.

Photo 7: A conveyor belt on an existing ash dump.

Photo 8: A stacker stacking ash, which will be spread out later.

2.2.3 Air emissions

The proposed coal fired power station would emit particulates, oxides of sulphur (SO_x), oxides of nitrogen (NO_x), carbon dioxide (CO_2) and various other elements into the atmosphere via the flue stacks. From an air quality perspective, particulates, SO_x and NO_x emissions have the potential to impact on air quality in the Witbank area.

The air quality study (refer to the Section 5.3.1) would investigate the impacts that the proposed power station would have on the ambient air quality, both with and without appropriate air pollution abatement technologies.

Particulates

Particulates refer primarily to the tiny particles of fly ash mentioned above. The fly ash comprises predominantly carbon but also includes trace elements of heavy metals. The impact of particles on human health depends on particle size and chemical composition as well as the duration, frequency and magnitude of exposure.

Flue gas cleaning would be implemented to reduce the concentration of particulates entering the atmosphere. Electrostatic precipitators or fabric filters would reduce the amount of particulates entering the atmosphere by approximately 99.8%. Typically, less than 50 mg/m^3 would be emitted to the atmosphere, i.e. some 290 tons/ month.

SO_x

Typical SO_2 emissions from the proposed power station would be in the region of 26 500 tons/ month. The stacks at power stations are typically designed to emit well above the inversion layer in order to improve dispersion and limit high concentrations at ground level.

SO_2 emissions can be reduced by introducing air pollution abatement technologies. Such abatement technologies, which allow for the introduction of a sorbent (usually limestone or dolomite), would reduce the amount of SO_2 that is emitted. Calcium from the limestone would react with the SO_2 to form calcium sulphite ($CaSO_3$) or calcium sulphate ($CaSO_4$) and CO_2. The

process is called Flue Gas Desulphurisation (FGD). The potential impacts of FGD as a technology alternative will be assessed in detail in the EIA Phase of this EIA and is described in more detail in Section 3.3.5.

The sorbent required for the FGD process would be obtained from commercial sources in the Northern Cape (should dry FGD be employed) or in Gauteng, Mpumalanga or North West Province (should wet FGD be employed). While the mining of sorbent is excluded from this EIA process, the transportation of the sorbent will be considered. It is envisaged that sorbent would be transported from the commercial source via existing railway line networks to the Witbank area. Please refer to Section 3.3.5 for alternatives related to the transport of sorbent. In addition to transport of the sorbent, an environmental review of the commercial source will be undertaken to assess their compliance with the relevant environmental legislation.

NO_x

NO_x (primarily in the form of NO_2) is formed and emitted during combustion. As with SO_2, prolonged exposure to high concentrations has implications for human health. Typical NO_2 and NO emissions from the proposed power station would be in the region of 220 tons/ month and 6 100 tons/ month respectively.

The amount of NO_x emitted to the atmosphere will be reduced by utilising boiler technology that incorporates low NO_x burners.

CO_2

CO_2 is a natural product of the combustion process and is a greenhouse gas. Increasing concentrations of CO_2 in the atmosphere contributes to global warming. Typical CO_2 emissions from the proposed power plant would be in the region of 2 250 kilotons/ month. Current technologies, e.g. carbon capture, are not advanced enough or sufficiently proven to remove CO_2 from the emission.

Mercury

Trace amounts of gaseous mercury would be emitted as a consequence of coal combustion. The air quality study would investigate the potential of such a risk and whether mercury would be emitted in sufficient quantities to cause a health hazard.

2.2.4 Coal supply

A new coal mine would have to be developed in order to supply the requisite volume of coal to the proposed power station over its expected life of approximately 40 to 50 years. An estimated 16 million tons of coal per year would need to be conveyed to the power station's coal stockyard. The stockyard serves as a buffer to ensure continuous supply of coal in the event of unforeseen breaks in the supply from the coal mine. It would store sufficient coal to operate the proposed power station for a minimum of 20 days.

The biophysical and socio-economic impacts of the new coal mine is the subject of a separate EIA process and is currently being undertaken by the mining house. Wherever possible, this EIA process would reflect any parallel process being undertaken for a new coal mine. In this

regard, it is important that the two EIA processes address cumulative impacts and achieve continuity insofar as issues common to both are concerned. It must be borne in mind that this EIA focuses on the power station and will reflect issues raised through the coal mine EIA as information only. Indications from DEAT are that their environmental decision-making will not occur in isolation but will take cognisance of both EIAs.

2.2.5 Cooling systems

The purpose of the main cooling system is to cool the steam that turns the turbines so that it can be pumped back to the boilers. As indicated above, the proposed power station would implement either a direct or indirect dry cooling system. These two alternatives are described in more detail in Section 3.3.7.

Apart from the main cooling system, an auxiliary cooling system would be necessary to remove heat from all other (auxiliary) plant, including air compressors, oil coolers and electrical motors. Generally, the power station auxiliary cooling system would comprise two identical cooling units, each servicing the requirements for three generating units. A typical auxiliary cooling facility is shown in Photo 9.

Photo 9: An auxiliary cooling facility

The decision to screen out a wet cooling system as an alternative is presented in Section 3.3.7.

2.2.6 Transmission substation and HV yard

The voltage of the generated electricity is transformed from 22 kV to 400 kV by generator transformers (Photo 10) prior to being transported to the High Voltage (HV) yard. The HV yard and transmission substation would occupy an area adjacent to the boiler and turbine units and within the proposed power station precinct. The transmission substation forms the link between the generating plant and the national grid. The HV yard would be the point from which future transmission lines would exit the power station. Photo 11 below shows a typical HV yard.

Photo 10: Step up transformers. The silver pipes enclose the conduits transporting electricity from the generator to the transformers (painted blue in the photograph)

Photo 11: A typical HV yard

2.2.7 Water use

A pipeline would be required to transport water from the existing Kendal power station to the proposed power station. The exact length and route alignment of the proposed pipeline is not known at this stage. A more detailed description and assessment will emerge as the process unfolds. Kendal power station sources its water via the Vaal River Eastern Sub-system. A single pipeline (with adequate spare capacity for the proposed power station) runs from the Khutala pump station to the Kendal power station's raw water reservoir. The Khutala pump station can draw water from either the Usutu sub-system or the Grootdraai sub-system. Water to the region will be augmented by the Vaal River Eastern Sub-system Augmentation Project (VRESAP), due to be completed by October 2007. VRESAP entails the transfer of 160 million m^3 of water per year from the Vaal Dam to the Knoppiesfontein diversion structure, near Secunda in Mpumalanga. This will augment the yield of the Vaal River Eastern Sub-system. Annexure D contains a letter from DWAF indicating the availability water for the proposed power station.

Assuming dry cooling, and no implementation of FGD technology, it is estimated that 0.2 ℓ of water would be required for every kW hour of energy produced. For a 4 200 MW power station, as is being proposed, this equates to approximately 3 million m^3 per year. A dry cooled power station consumes approximately 18 times less water than an equal capacity wet cooled power station. Figures for water consumption at the proposed power station would be approximately 7.9 million m^3 per year should FGD technology (refer to Section 2.2.3) be employed.

Eskom's philosophy with regard to water management commits all power stations to a "zero liquid effluent discharge" plant i.e. once in the system, no water would be discharged from the power station. The power station would include the construction and operation of a water and wastewater treatment plant. Water piped into the power station would be treated to provide potable water (for human consumption), demineralised water (for use in the boilers) and industrial water (for sundry uses). All effluent and wastewater produced as a result of the

normal operation of the power station would be treated at the wastewater treatment plant before being recycled. This water recycling system would require the construction of dams within the power station precinct to store clean and dirty water. These dams, typically two "clean" and two "dirty" water dams, would store stormwater run-off from the power station terrace and process water respectively, and is used *inter alia* for water supplies for dust suppression on the ash dumps.

2.2.8 Road access

A new access road would be constructed to link the proposed power station with the nearby existing transport network. Details regarding access points and route alignments are not available at this stage of the process but will be examined in detail in the EIA Phase of this process. Apart from the access road, there would be internal roads constructed within the power station precinct to afford access to the various buildings and structures. The impact of the proposed power station and associated infrastructure on local traffic conditions will be the subject of a specialist traffic study (refer to Section 5.3.12).

2.2.9 Storage tanks

The proposed development includes the installation of a number of storage tanks within the boundary of the power station site. The number and volumes of tanks required would be informed by further technical planning as well as the current environmental investigation. At this stage, it is anticipated that storage tanks may typically be required for the following liquids:

- Diesel;
- Fuel oil;
- Demineralised water;
- Neutralised water;
- Acid; and
- Caustic.

3 IDENTIFICATION OF ALTERNATIVES

Alternatives are considered at various stages of proposed policies, plans and projects. For example, when compiling South Africa's energy policy, alternative means of generating electricity were considered. These are "strategic-level alternatives". Section 3.2 below describes the consideration of strategic-level alternatives, which are informed by the South African White Paper on Energy, the Integrated Energy Plan and the National Integrated Resource Plan. Strategic-level alternatives do not form part of this project-level EIA.

As the name implies, project-level alternatives are assessed at the project level. It is these alternatives that are put forward and described in this Scoping Report. Part of the Scoping process is to screen out those alternatives that will not be considered in the EIA Phase. Unless there is valid and logical justification to screen them out, all feasible alternatives should be considered in the EIA Phase.

During the next phase, i.e. the EIA Phase, each of the selected alternatives will be assessed in terms of their potential impacts on the biophysical and socio-economic environment. The formulation of mitigation measures to reduce the significance of negative impacts is a key part of the assessment process. In deriving mitigation measures, a further set of alternatives are generated.

At the end of the EIA process, Eskom would be able consider the assessment of the alternatives described in this section, together with any mitigation measures that are proposed, to select a preferred option to submit to DEAT.

3.1 THE "NO GO" ALTERNATIVE

While there is a requirement in terms of the ECA to examine the "no go" alternative, this option would amount to there being no changes in the regional biophysical and socio-economic situation, or in the national electricity generation situation. With the current generation capacity, this would result in electricity shortfalls in the short to medium term. From strategic, social and economic perspectives, this is considered to be an unfeasible alternative. As a result, the "no go" alternative is not being evaluated at the same level of comparative detail that the project alternatives reflected in this report are. Rather, the status quo forms the baseline against which potential positive and negative impacts of the proposed power station are assessed.

3.2 STRATEGIC ALTERNATIVES

Strategic alternatives refer to those alternatives that were considered at a higher level than this project-level EIA, e.g. the alternative geographical regions for the location of a new power station in South Africa that were considered and assessed prior to the inception of this EIA process. Similarly, alternative methods of generating electricity are identified in the IEP, NIRP and ISEP planning processes and do not form part of this EIA. Refer to Section 1.2 above for a description of the policy framework of this project.

3.3 PROJECT LEVEL ALTERNATIVES

3.3.1 Sites

As described in Annexure A and Section 1.2.5, nine potential sites were subjected to a site selection process, where potential sites were identified, screened and two alternative sites were ultimately selected to be assessed in the EIA process. The two sites were selected based on a specialist workshop that ranked the potential sites with respect to several criteria, including technical, social and biophysical criteria. Site X and Site Y (illustrated in Figure 1) emerged as the most preferred sites to be considered in the EIA process. The potential impacts of the proposed power station at each of the sites will be addressed in the EIA Phase.

3.3.2 Layout alternatives

To date, no potential layouts have been proposed for the alternative sites. Alternative power station layouts will be informed by the outcomes of the various specialist studies, which will be undertaken in the EIA Phase.

3.3.3 Combustion technology

The selection of boiler technology is dependant on the OEM eventually selected. The technology would take cognisance of Eskom's technical requirements, including but not limited to, unit design, size, operating parameters and operating philosophy. With respect to environmental issues, any difference in the boiler arrangement would be negligible and therefore boiler arrangement will not be considered further in the EIA process.

With respect to fuel, the proposed power station would use pulverised fuel i.e. pulverising coal into a fine dust before feeding it into the boiler for combustion. While other technologies exist, like fluidised bed and coal gasification technologies, pulverised fuel technology is the only one proven for a power station of the magnitude proposed. Around the world, fluidised bed technology (where coal is burned on a bed of solid particles kept in turbulent motion by air bubbles forced into the bed from below) has only been proven where the generation unit sizes are less than 300 MW. Coal gasification refers to the process where coal is partially oxidised to create a combustible synthesis gas, which is then used as the fuel for the power station. However, as with fluidised bed technology, coal gasification has not been proven internationally for units with a nominal size of 900 MW.

3.3.4 Ash handling

There are three alternative methods of handling ash:

- Above-ground ash dumping: Ash is conveyed to an ash dump, within the power station precinct, where it would be stacked and spread. The ash dump would have the capacity to accommodate ash disposal for the duration of the life of the power station. The dump would be continuously rehabilitated with topsoil and re-vegetated as it develops.

- Back ashing: This refers to dumping ash within the open-cast coal mine, after all the usable coal has been excavated. The overburden (that layer of surface material that is removed prior to mining the coal) would be returned to line the excavation before the ash is placed on top of it. The ash would then be stacked, spread, rehabilitated with topsoil and re-vegetated.

- In-pit ashing: The difference between this method and back ashing is that the ash would be placed directly into the existing excavation and the overburden and topsoil would be placed on top of the ash. Thereafter the dump would be re-vegetated.

Each of these alternatives will be taken through to the EIA Phase. Depending on the outcomes of the EIA process, one or a combination of these alternatives would be employed.

3.3.5 Emissions

As discussed in Section 2.2.3 there are two effective alternatives available that are suitable to South African conditions to minimise emissions. With regard to particulates, either electrostatic precipitators or fabric filters may be used. Both alternatives will be discussed in the EIA Phase.

With regard to reducing SO_x, FGD technology is an option that could be employed to reduce SO_x entering the atmosphere by up to 90%. There are two alternatives FGD technologies that may be used – wet FGD and dry FGD. The FGD process entails the use of scrubbers, allowing SO_2 to dissolve into a solution. CO_2 is one of the by-products of the chemical process. The generated waste can be oxidised to form gypsum (which may have commercial value) or it may be dewatered (and the water reclaimed) and disposed of with the fly ash. Wet FGD uses approximately 0.147 ℓ/ kW hour while the dry FGD process uses 0.055 ℓ/ kW hour.

Both FGD alternatives will be considered further in the next phase. The implications for water consumption, increased CO_2 output, operating cost and reduced SO_2 output will be examined.

Sorbent for FGD would be transported to the study area via existing railway lines. Thereafter there are two alternatives to transport sorbent to the proposed power station:

- Sorbent railed to an existing railway siding in the vicinity of the proposed power station, would be transported by truck to the proposed power station. This option may entail the construction of a dedicated haul road.
- The second option is to construct a new railway line from the existing rail network to the proposed power station, where a railway siding would need to be constructed. This option may entail alternative route alignments for the new railway line.

These alternatives and their implications will be discussed further in the EIA Phase.

3.3.6 Coal

Alternatives related to the sourcing and mining of coal do not form part of this EIA process. However, the alignment of the overland conveyor required to transport the coal from the coal source to the proposed power station will be assessed in this EIA process. Overland conveyor

belts are the only practical alternative with respect to the transport of coal. Transport by road or rail would be impractical and uneconomical. In addition road transport would have concomitant traffic and environmental impacts. Alternatives with respect to the alignment of the conveyor belt would depend on the location of the coal source. Alternative conveyor belt alignments will be investigated in greater detail in the EIA Phase.

3.3.7 Cooling systems

With respect to the main cooling system most large power stations are either wet-cooled or dry-cooled. Dry-cooled systems are less water intensive than wet-cooled systems (dry-cooled systems currently used by Eskom require < 0.2 l/kWh – litres of water per electricity unit sent out – while wet-cooled systems require approximately 1.8 l/kWh). Given the imperative of water conservation in the region, wet cooling will not be considered further in this EIA.

There are two alternative methods of dry cooling – direct dry cooling or indirect dry cooling. A schematic of a direct dry cooling system is illustrated in Figure 8. Exhaust steam from the turbines flows to the dry cooling elements or heat exchanger. Heat from the steam is removed by air blown over the condenser by forced draught fans, causing the steam to condense to water. The condensate is then pumped back to the boiler. Cooling occurs within the main water circuit, by means of the forced draught fans, and there is no need for cooling towers.

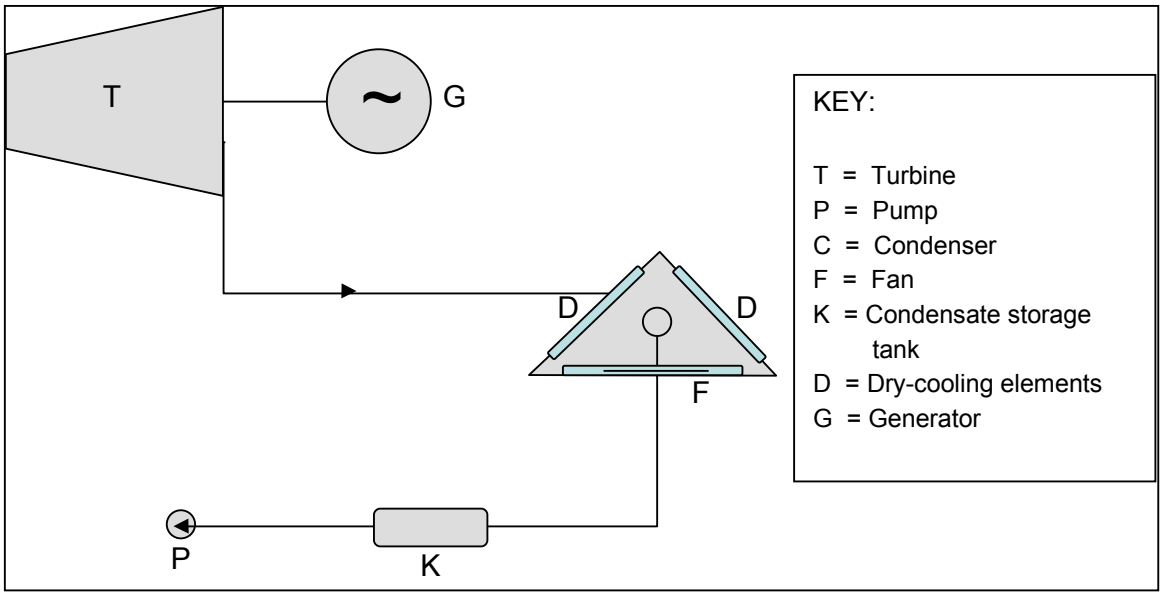


Figure 8: Direct dry cooling

For an indirect dry cooling system (illustrated in Figure 9), cold water from cooling towers flows to the condenser tubes, where steam from the turbines pass over them. The steam is cooled and pumped back to the boilers while the resulting heated water pumped back to the cooling towers. Heat exchangers inside natural draught cooling towers cool the heated water before it flows back to the condenser tubes. Cooling is achieved via a secondary circuit, resulting in the need for cooling towers.

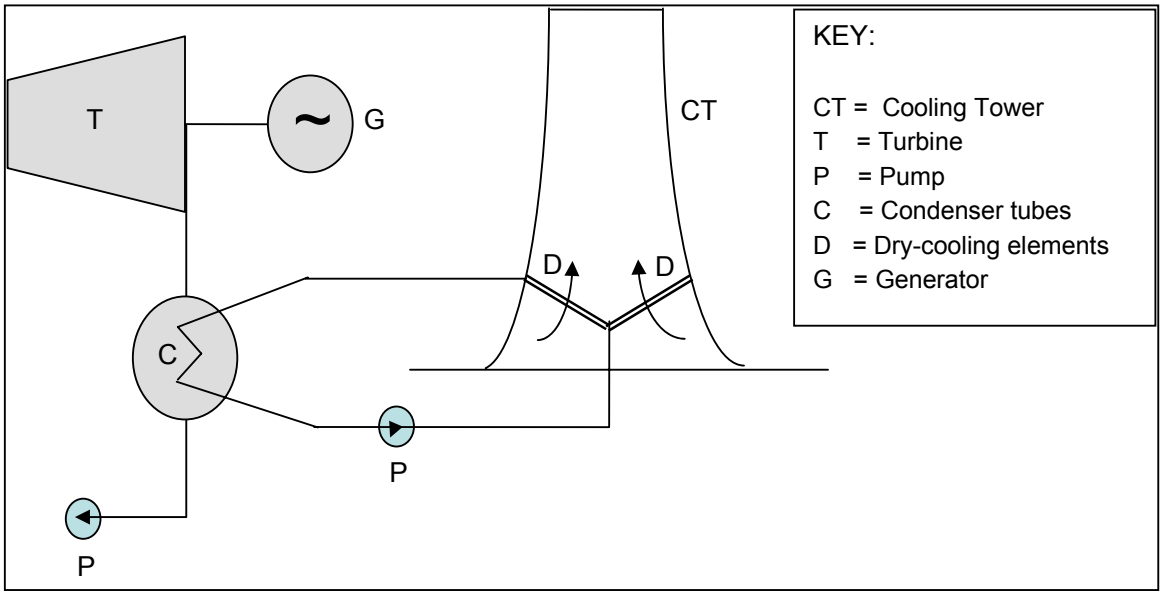


Figure 9: Indirect dry cooling

Both direct and indirect dry cooling will be considered further in the EIA Phase.

3.3.8 Water supply pipeline

Water supply to the area will be augmented via VRESAP. Water supply to the proposed power station would be via pipeline from the existing Kendal power station. The exact length and route alignment of the proposed pipeline is not known at this stage. A more detailed description and assessment of proposed alignments will follow in the EIA Phase.

3.3.9 Road access

Depending on site selection and traffic implications, there may be various access road alignment alternatives, which would be assessed in the EIA Phase of this EIA.

4 THE AFFECTED ENVIRONMENT

4.1 GENERAL DESCRIPTION OF THE REGION

As indicated earlier there are two alternative sites that will be considered in this EIA process. Site X occurs within the Delmas Local Municipality, Mpumalanga, and Site Y occurs primarily within Gauteng, in the Kungwini Local Municipality. Several specialist studies are proposed (refer to Chapter 5) for the EIA Phase, which will provide a detailed description of each site with respect to their particular discipline.

The region is known for rich deposits of coal reserves and accordingly, several coal mines and associated coal-fired power stations can be found in the area. Mining in the area is supported as long as cognisance is taken of environmental issues, including rehabilitation (Delmas Spatial Development Framework, 2002).

The largest town within a 30 km radius is Witbank. The smaller town of Bronkhorstspruit lies approximately 20 km north west of the alternative sites. The Maputo Corridor, which is ultimately intended to link Walvis Bay in Namibia with Maputo in Mozambique, traverses in an east-west direction just to the north of the sites. The N4 highway and adjacent railway comprise the Maputo Corridor, which is aimed at strengthening linkages for trade and tourism among Namibia, South Africa, Mozambique and Botswana.

The region forms part of the Highveld plateau and is characterised by a generally flat topography, grassveld, maize and sunflower farming, coal mines, power stations and other industries. Drainage in the area is generally northward. The growing demand for water in the Highveld, by Eskom and Sasol in particular, led to the conception of VRESAP. The project comprises the transfer of 160 million m^3 of water per year from the Vaal Dam to the Knoppiesfontein diversion structure, near Secunda in Mpumalanga. This will augment the yield of the Vaal River Eastern Sub-system. VRESAP is currently under construction and is expected to be ready for commissioning by October 2007.

4.2 DESCRIPTION OF THE ALTERNATIVE SITES

Figure 1 illustrates the location of the alternative sites for the proposed power station. Site X is approximately 5 000 ha and located roughly 30 km west of Witbank. It lies within the north eastern portion of the Delmas Local Municipality. Kungwini Local Municipality (in Gauteng Province) lies immediately to the west and the Emalahleni Local Municipality (Mpumalanga Province) lies about 3 km to the east.

Site Y is approximately 3 km south west of Site X, is roughly 2 500 ha in area and lies within the south eastern portion of the Kungwini Local Municipality. It is bordered to the east and south by the Delmas Local Municipality.

4.2.1 Flora and fauna

According to the South African National Biodiversity Institute, both sites fall within the Grassland Biome, where most of the county's maize production occurs. The Delmas Spatial Development Framework (2002) notes that the area has a high agricultural potential. The predominant vegetation at both sites is grassveld. Maize and sunflower cultivation can be found on, and in the vicinity of, the sites.

As a consequence of mining and farming in the area, it appears that only small animals are to be found at the sites. Small mammals known to occur in the area include hedgehog, rabbits, polecat, meerkat and the ubiquitous rats and mice. Given the habitat, it is likely that korhaans, larks, longclaws, species of *Euplectes* (bishops and widows), weavers, starlings and sparrows occur in the grassveld.

A specialist study will be undertaken in the EIA Phase to evaluate the status quo and determine the potential impacts of the proposed power station on terrestrial flora and fauna.

4.2.2 Geology and drainage

Both sites are generally flat, slightly undulating but without significant hills. The soils at both sites belong to the Plinthic Cantena, comprising of Upland duplex and Margalitic soils. The underlying geology is the Mid-Ecca Group, one of the layers of the Karoo Supergroup. It is in this layer that the rich coal deposits that the region is known for were formed. The mining of the Mid-Ecca Group for coal led to the development of Witbank and surrounding settlements. There are five major coal seams in the vicinity of the two sites, in varying degrees of exploitation. Other minerals found in the area are flint, iron, gold, molibdenite, cobalt, pewter and malachite (Emalahleni Local Municipality Spatial Development Framework, 2005).

In terms of drainage, the Wilge River runs through Site Y in a northerly direction. The Klipspruit stream, a tributary to the Wilge River, also traverses Site Y in a northerly direction, before joining the Wilge. Site X is traversed by seasonal streams, including the Holfonteinspruit, the Klipfonteinspruit and a few unnamed seasonal water courses. Small farm dams are found in both sites.

A specialist study is proposed to investigate the potential impacts of the proposed power station on the aquatic ecosystems (i.e. streams and wetlands) of the two sites.

4.2.3 Climate

The study area displays the warm summers and cold winters typical of the Highveld climate. The average summer and winter daytime temperatures are 25^0C and 20^0C, respectively. Rainfall occurs mainly as thunderstorms and drought conditions occur in approximately 12% of all years (Kendal power station environmental baseline data, undated). The Environmental Potential Atlas for Mpumalanga and Gauteng places rainfall at Site X as ranging between 621 mm and 750 mm per year and between 540 mm and 685 mm per year at Site Y.

The prevailing wind direction is north west during the summer and east during winter. Winds are usually light to moderate.

4.2.4 Existing infrastructure

Both sites occur between the N4 and N12 national roads. The R545 lies approximately 2 km east of Site X. Apart from dirt tracks and farm roads, there are no significant roads at either site. A specialist traffic study will examine traffic impacts on road networks in the vicinity of the sites.

4.2.5 Heritage resources

There may be heritage resources (e.g. graves, old buildings etc.) at the alternatives sites. A specialist heritage study is proposed to be undertaken to investigate possible heritage impacts as a consequence of the proposed power station.

4.2.6 Planning framework

Development in the two relevant municipalities is guided by the Metsweding District Municipality Spatial Development Framework (still in Draft form) and the Delmas Local Municipality Spatial Development Framework that was compiled in February 2002. Farming, coal mining and urban development are the predominant land use activities in the area.

Power stations and coal mines have in the past promoted the formation of dispersed support settlements. To avoid this, spatial planning frameworks in the region encourage the consolidation and the extension of existing settlements. A specialist study is proposed to determine whether the proposed power station is in keeping with the planning framework for the two municipalities.

5 IDENTIFIED IMPACTS

The proposed coal-fired power station and associated infrastructure are anticipated to impact on a range of biophysical and socio-economic aspects of the environment. One of the main purposes of the EIA process is to understand the significance of these potential impacts and to determine if they can be minimised or mitigated. The Scoping Phase describes the full range of potential impacts and then proposes, based on a clear motivation, which impacts should be considered in detail in the EIA Phase, and which should be screened out at this stage.

5.1 CONSTRUCTION PHASE IMPACTS

These are impacts on the biophysical and socio-economic environment that would occur during the construction phase of the proposed project. They are inherently temporary in duration, but may have longer lasting effects e.g. pollution of a wetland during construction could have effects that may last long after construction is over. Construction phase impacts could potentially include:

- Disturbance of flora and fauna;
- Impacts on water resources;
- Socio-economic impacts;
- Increase in traffic volumes in the vicinity of the construction site;
- Windblown dust;
- Noise pollution; and
- Litter/ waste pollution.

Based on the temporary duration of the construction phase and the fact that negative impacts of construction can be readily predicted and mitigated, generally speaking, more attention will be given to the operational phase impacts of the proposed power station than to the construction phase impacts. However, wherever relevant, specialist studies would consider construction phase impacts, and in certain cases, would be focussed on construction phase impacts e.g. impacts on terrestrial flora and fauna are mainly construction phase impacts.

It should be noted that a comprehensive construction phase Environmental Management Plan (EMP) would be developed and implemented to regulate and minimise the impacts during the construction phase. In this regard, a framework EMP will be developed as part of the EIA phase reporting.

5.2 OPERATIONAL PHASE IMPACTS

Given their long term nature, operational phase impacts will come under close scrutiny in the EIA Phase of this EIA. The specialist studies will identify and assess the implications of these impacts and include measure to minimise predicted impacts. The assessment of potential impacts will help to inform Eskom's selection of preferred alternatives to be submitted to DEAT for consideration. In turn, DEAT's decision on the environmental acceptability of the proposed

project and the setting of any conditions will be informed by the specialist studies, amongst other information, to be contained in the EIR.

It is normal practice that, should the proposed power station and associated infrastructure be authorised, the development and implementation of an operational EMP would be required. The operational EMP is designed to mitigate negative impacts associated with the operational phase of the project and will be informed by the mitigation measures proposed by the specialists.

5.3 SPECIALIST STUDIES

As required by the Call for Proposals put out by Eskom when embarking on the EIA process, Ninham Shand formed a team with a suite of specialist consultants in various disciplines. As part of the scoping exercise, the team of specialists attended a site visit and workshop to determine if, on the basis of a literature review and the site inspection, the scope of their work as originally envisaged could be reduced, or whether it needed to be expanded or amended. The outcome of the workshop was that, while some impacts might have been considered to be relatively benign, best practice and a need to fully understand the implications of the proposed project, warranted that further investigation of all identified issues be undertaken in the EIA Phase. Accordingly, the following specialist studies and specialists are proposed to be undertaken in the EIA Phase:

• Air quality impacts	AirShed Planning Professionals
• Noise impacts	Jongens Keet Associates
• Visual impacts	Strategic Environmental Focus
• Impacts on flora and fauna	Makecha Development Association
• Impacts on aquatic ecosystems	Ecosun
• Groundwater impacts	Groundwater Consulting Services
• Risk assessment	Ilitha Riscom
• Heritage impacts	Northern Flagship Institution
• Impacts on agricultural potential	University of the Free State
• Socio-economic impacts	Urban-Econ
• Planning impacts	Seaton Thomson and Associates
• Traffic impacts	Ninham Shand: Roads
• Geotechnical constraints	Ninham Shand: Geotech

Each of the specialists has the relevant experience and expertise to undertake the proposed studies. Please refer to Annexure E for CVs of key personnel from each of the specialist sub-consultant companies.

A description of each of the proposed specialist studies follows. The Terms of Reference for each of the specialist studies is provided in this chapter as well as in the Plan of Study for EIA (PoSEIA) in Annexure F. As discussed in Section 5.2, it is important that the public has the opportunity to comment on, and the authorities approve of, the proposed approach to the EIA Phase. Commenting on the PoSEIA allows for this and ensures that the proposed approach, including the scope of work for the specialists, is informed by public and the authority feedback in order to ensure that the work produced addresses the issues of concern at the requisite level of confidence. A robust basis for informed debate and decision-making is thus provided.

Key outcomes of the specialist studies would be information that will allow I&APs to engage in informed debate on the implications of the proposed project and that will allow Eskom to make an informed decision on the preferred site, layouts and various other alternatives. Eskom will also gain an understanding of the range and benefits of implementing possible mitigation measures.

5.3.1 Air quality impacts

As discussed in Section 2.2.3, operation of the proposed power station would result in a range of gases as well as particulates being emitted into the atmosphere. Atmospheric emissions have the potential to be harmful to human health (e.g. in the case of SO_2) as well to natural ecological processes. As air quality is likely to be one of the key factors affecting the acceptability of various sites, as well as key to assessing the benefits of possible alternatives/ mitigation aimed at reducing emissions, a detailed air quality assessment is regarded as central to the EIR. Accordingly a significant amount of resources have been allocated to it.

The proposed air quality study would entail determining the ambient air quality to establish baseline conditions and an assessment of the degree of compliance with the national standards in addition to relevant international standards. The South African national ambient air quality standards are listed in Schedule 2 of the National Environmental Management Air Quality Act (NEMAQA) (No. 39 of 2004). The air quality study will entail modelling alternative operating scenarios and comparing the results against the South African national standards[9].

The proposed Terms of Reference for the air quality study are as follows:

- Participate in the site selection process.

- Establish baseline conditions, by:
  - Describing the atmospheric dispersion potential of the area based on available meteorological data.
  - Describing existing sources of atmospheric emissions in the area.
  - Describing the existing air quality, especially with respect to particulates, oxides of sulphur and oxides of nitrogen.
  - Providing an overview of legislative and regulatory requirements pertaining to atmospheric emissions and ambient air quality guidelines and standards.
  - Initial screening dispersion modelling of power station configuration scenarios to provide input into air pollution abatement technology alternatives that may be considered.

- Predict potential impacts of the proposed power station by:

[9] The South African Bureau of Standards was appointed to assist DEAT in developing ambient air quality standards and this culminated in two finalised documents – *SANS 69: Framework for setting and implementing national ambient air quality standards* and *SANS 1929: Ambient air quality, limits for common pollutants*. These two documents have not yet been adopted by DEAT, due to certain policy issues, and accordingly the NEMAQA Schedule 2 remains as the South African national standard.

- Compiling a comprehensive emissions inventory for the construction and operational phases of the project and taking into account:
  - Two operating scenarios:
    - 6 x 900 MW, pulverised fuel, with FGD,
    - 6 x 900 MW, pulverised fuel, without FGD,
  - Construction phase emissions e.g. site clearance and earthworks
  - Operational phase emissions e.g. ashing operations, raw materials handling, waste disposal and power station stack emissions,
  - Emissions during routine, upset and emergency conditions,
  - Emissions during shutdowns,
- Selecting and populating of a suitable air dispersion model,
- Undertaking stack height screening modelling to inform recommendations regarding a suitable stack height,
- Applying the air dispersion model to determine incremental and cumulative pollutant concentrations in the ambient air as a result of both the construction and operational phases of the proposed power station,
- Assessment of air quality impacts including:
  - Evaluating estimated emissions,
  - Comparing estimated emissions to local and international limits,
  - Evaluating emissions in terms of global warming potential, within the context of South Africa's last reported contribution to greenhouse gases,
  - Evaluating (a) magnitude, frequency of occurrence, duration and probability of impacts, (b) local, regional national and international significance of predicted impacts, and (c) level of confidence in findings,
- Recommendation of mitigation measures to address predicted impacts.
- Providing insight into site selection by comparing the air quality implications, with and without mitigation measures, of the alternative sites.

- Compile an air quality assessment report that documents the tasks mentioned above.

- Compile an air quality management plan in consultation with Ninham Shand and Eskom, for incorporation into the construction and operational phase Environmental Management Plan (EMP) to be developed for the proposed power station. The air quality management plan would include:
  - Identification of mitigation and management measures to meet required control efficiencies,
  - Liaising with Eskom to determine stack height, and
  - Documentation of the monitoring, mitigation and management measures for integration into the project EMP.

5.3.2 Noise impacts

Various components of the proposed power station would have an impact with respect to ambient noise levels. As with the air quality study, the proposed noise study would comprise an assessment of the ambient, baseline conditions and an assessment of compliance with the national standards.

The study would be guided by the South African National Standard (SANS) 10328 "Methods for environmental noise impact assessments". Ambient conditions would be measured in terms of SANS 10103:2003, "The measurement and rating of environmental noise with respect to land use, health, annoyance and speech communication". Previous studies have shown that noise emanating especially from the conveyers, wastewater treatment and other infrastructure, and in particular as a result of increased traffic and the operation of the banks of cooling fans, may result in significant noise impacts. As these impacts are highly site- and weather-specific, it is necessary to understand each noise source and then ascertain possible mitigation measures.

The proposed Terms of Reference for the noise impact study are as follows:

- Preliminary general assessment, including:
    - Collection of baseline information from ground-truthing, Ninham Shand and Eskom;
    - Determine layout of proposed power station within the identified alternative sites;
    - Determine details of planned operations at the proposed power station,
    - Accessing and referring to the Traffic Specialist Study;
    - Accessing existing noise measurement/ analysis data within the study sites and/ or at a similar power station;
    - Accessing information from the Public Participation Process regarding noise concerns;
    - Undertaking a site visit to ascertain potential noise sensitive areas in co-operation with the socio-economic specialist;
    - Identify other major noise sources in the vicinity of the two alternative sites; and
    - Identify appropriate noise measurement sites.

- Establishing the ambient noise context at each of the two alternative sites by means of a field inspection and noise measurement survey, focussing specifically on identified noise sensitive areas. This will include:
    - Undertaking noise measurements in terms of SANS 10103:2003, "The measurement and rating of environmental noise with respect to land use, health, annoyance and speech communication";
    - Assessing and recording the qualitative nature of the noise climate i.e. to ensure a correlation between noise perceived by the human ear and noise measured by instruments; and
    - Reviewing any existing noise survey data undertaken by Eskom.

- Assessing the potential noise impacts of the proposed power station on the ambient noise levels at each of the two alternative sites. This will include:
    - Identifying potential noise impacts associated with the construction and operational phases of the proposed power station;
    - Assessing the impacts of the proposed power station and evaluating the effect on the change in the noise climate; and

- Identify mitigation measures to minimise or eliminate predicted impacts on noise receptors. This will include providing input into the construction and operational phase EMP to be developed for the project.

- Compile a report that reflects on the above and which offers an opinion on the preferred site, with and without the implementation of mitigation measures.

5.3.3 Visual impacts

The purpose of this study would be to assess the significance of the visual impact of the proposed power station and associated infrastructure on the surrounding area. The visual assessment will take into account the relevant view catchment areas/ viewsheds, view points and receptors in order to predict potential impacts and to propose mitigation measures to reduce negative impacts. Cooling towers (should indirect dry cooling be implemented), cooling towers, the smoke stacks and buildings are significant structures that require consideration, in addition to the associated infrastructure. Accordingly, the proposed study will describe the relative impacts of the proposed layouts at the two sites, as well as propose measures to obtain the least visually obtrusive configuration of components. The proposed Terms of Reference for the visual impact study follow:

- Participate in the site selection process.

- Source and review baseline information and participate in the finalisation of these terms of reference.

- Undertake a subsequent site visit(s) and compile a report that considers the two proposed sites and addresses the following:
    - Description of the receiving environment;
    - Establishment of a view catchment area, view corridors, view points and receptors;
    - Indication of potential visual impacts (including lighting impacts at night) using established criteria;
    - Description of alternatives, mitigation measures and monitoring programmes; and
    - Complete 3D modelling and simulations for the two alternative sites. The modelling and simulations should demonstrate:
        - Views with and without mitigation;
        - Views under worst (least visible) and best (most visible) weather conditions;
        - Views during night time;
        - Views under varying operating scenarios; and
    - Offer an opinion on a preferred site from a visual impact perspective.

5.3.4 Impacts on terrestrial flora and fauna

Although a large proportion of the two sites has been disturbed in the past by agricultural activities, and mining activities in the local vicinity, certain areas may support important remnants of terrestrial habitat. The purpose of this study is thus to determine what impacts the proposed power station would have on the ecological characteristics of the study area. The study will focus on the identification and description of biodiversity patterns at community and ecosystem level, species level and in terms of significant landscape features. Any sensitive elements that might be adversely affected by the proposed project, inclusive of the associated linear infrastructure beyond the site boundary, will be noted and the significance of the impact assessed at an appropriate scale.

This study would provide input into the construction and operational phase EMP and would help to identify appropriate configurations of the power station within the alternative sites.

The proposed Terms of Reference for this study follow:

- Participate in the site selection process.

- Source and review baseline information and participate in the finalisation of these terms of reference.

- Undertake a subsequent site visit(s) and compile a report that considers the two proposed sites and addresses the following[10:]
    - Broad description of the ecological characteristics of the sites and surrounds;
    - Identification and description of biodiversity patterns at community and ecosystem level (main vegetation type, plant and animal communities in vicinity and threatened/vulnerable ecosystems species), species level (Red Data Book species, presence of alien species) and in terms of significant landscape features;
    - General comment on whether biodiversity processes would be affected (including comment on how it would be affected);
    - Identification of potential impacts and recommendations to prevent or mitigate these;
    - Offer an opinion on a preferred site in terms of terrestrial fauna and flora, with and without mitigation measures; and
    - Indication of the salient elements of the report on a map, which is to be included as part of the specialist report.
    - Liaise with the aquatic ecosystem specialist to ensure a holistic understanding of the likely impacts on both aquatic and terrestrial flora and fauna.

[10] Partially derived from the Botanical Society of SA Conservation Unit's *Recommended Terms of Reference for the Consideration of Biodiversity in Environmental Assessment and Decision-making*. March 2005.

5.3.5 Impacts on aquatic ecosystems

The alternative sites support wetland areas and riverine systems and as these habitat types are important, they require specialist investigation. The aquatic study would determine and evaluate the status of aquatic ecosystems in the study area and specifically within the alternative sites. As can be seen from the Terms of Reference in the PoSEIA, the aquatic study is quite similar to the terrestrial ecology study. Any sensitive elements that might be adversely affected directly or indirectly by the proposed project, inclusive of the associated linear infrastructure beyond the site boundary, will be noted and the significance of the impact assessed at an appropriate scale.

This study would provide input into the construction and operational phase EMP and would help to identify appropriate configurations of the power station within the alternative sites.

The proposed Terms of Reference for the aquatic impact study are as follows:

- Participate in the site selection process.

- Source and review baseline information and participate in the finalisation of these terms of reference in consultation with Ninham Shand and the terrestrial ecologist.

- Undertake a subsequent site visit and compile a report that considers the two proposed sites and reflects the following:
    - Broad description of the aquatic ecology of the site and surrounding wetlands and streams;
    - Identification and description of biodiversity patterns at community and ecosystem level (plant and animal communities in the vicinity and threatened/vulnerable ecosystems species), species level (Red Data Book species, presence of alien species) and in terms of significant landscape features (e.g. wetlands);
    - Aquatic assessment and habitat classification;
    - Wetland and aquatic status assessment;
    - General comment on whether biodiversity processes would be affected (including comment on how these would be affected);
    - Identification of potential impacts and recommendations to prevent or mitigate these;
    - Offer an opinion on a preferred site in terms of aquatic ecosystems, with and without mitigation measures; and
    - Delineation of aquatic ecosystems, as well as their ecological significance, on a map, which is to be included in the report.

5.3.6 Groundwater impacts

As described in Section 3.3.4, there are three alternatives for the disposal of ash – above ground dumping, back ashing and in-pit ashing. Of all the activities associated with the power

station, the means of ash disposal has the greatest potential to impact on groundwater resources.

The purpose of the groundwater study would be to establish the status of the groundwater resource, in terms of quality and quantity of the resource, and then determine how it could be affected by the proposed power station and all associated activities, including the waste water treatment works. Again, emphasis is placed on mitigation measures to either prevent or minimise impacts on the groundwater. The proposed Terms of Reference for the groundwater impact study follow:

- Participate in the site selection process.
- Undertake a baseline review, including a literature review, to establish the status quo of quality and quantity of groundwater resources at the two alternative sites.
- Evaluate the data collected, and if necessary, undertake fieldwork to address any shortfalls in the existing data.
- Undertake an assessment to predict potential impacts, as well as their significance, of the proposed power station and associated infrastructure on groundwater.
- Assess in detail the groundwater impacts of the three proposed means of ash disposal:
    - Above ground dumping;
    - Back ashing; and
    - In-pit ashing.
- Assess in detail the potential groundwater impacts of other activities associated with the power station, including fuel and chemical storage.
- Propose mitigation measures that could reduce or eliminate identified impacts.
- Offer an opinion on which of the alternative means of ash disposal would be preferable from a groundwater perspective, with and without mitigation measures.
- Offer an opinion on site layout within each of the alternative sites.
- Offer an opinion on a preferred site from a groundwater perspective, with and without mitigation measures.
- Compile a report that reflects the above and includes appropriate mapping.

5.3.7 Risk assessment

A power station of the magnitude proposed has an element of risk associated with its operation. This risk relates mainly to the potential for an accident to cause loss and/ or damage to life and/ or property surrounding the power station.

Given that the power station would be generating large amounts of electricity and would have on-site storage of hazardous substances, there would be a risk to the staff working there. This study is intended to determine the risks and then to quantify them at a relatively coarse level with the main purpose of highlighting areas requiring further attention in the future, and whether one of the alternative sites/ layouts is preferred. This study is not a Major Hazardous Risk investigation (in terms of the Major Hazard Installations regulations of the Occupational Health and Safety Act, No.85 of 1993), but an informant to the EIA process. A Major Hazard Installation risk assessment will, however, need be undertaken by Eskom in due course.

The proposed Terms of Reference for the risk assessment are as follows:

- Conduct a preliminary risk assessment that will review the scope of the proposed coal fired power station and associated infrastructure and list hazardous materials.

- Estimate "worst case" scenario impacts:
  - on the health of on-site employees; and
  - with respect to off-site incidents at each of the two alternative sites.

- Describe mitigation measures that could reduce and/ or eliminate risk.

- Compile a report that reflects the above and includes appropriate mapping of risks.

5.3.8 Heritage impacts

The proposed development could have an impact on heritage resources[11] within the study area, especially during the construction phase of the proposed power station. The construction phase would be associated with extensive bulk earthworks and excavations, increasing the risk of damaging or destroying potential heritage resources within the layout footprint area, inclusive of the associated linear infrastructure beyond the site boundary.

The heritage study would determine the likelihood of heritage resources occurring in any area that may be impacted on by the proposed power station and associated infrastructure. The heritage specialist would also provide input into the construction phase EMP, where the steps to be undertaken, should a heritage resources be found, will be outlined. The proposed Terms of Reference for this study follow:

- Participate in the site selection process.

[11] Heritage resources include archaeological, palaeontological and cultural resources are protected by the National Heritage Resources Act (No.25 of 1999)

- Source and review baseline information and participate in the finalisation of these terms of reference.

- Conduct a heritage study of the two proposed sites in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act 25 of 1999). This would include:
    - Conducting a desk-top investigation of the area; and
    - A visit to the proposed development sites.

- Compile a report which would:
    - Identify possible archaeological, cultural and historical sites within the proposed development areas;
    - Identify the potential impacts of construction, operation and maintenance of the proposed development on heritage resources;
    - Offer an opinion on a preferred site in terms of heritage resources, with and without mitigation measures;
    - Recommend mitigation measures to ameliorate any negative impacts on areas of heritage significance; and
    - Include a map that illustrates the salient aspects of the report

5.3.9 Impacts on agricultural potential

The study would determine the status quo of agricultural resources within the study area. Potential direct and indirect impacts on agricultural activities would be identified and assessed to determine their significance at each of the alternative sites, including the associated linear infrastructure beyond the site boundary. To a certain degree, the results of this study will have a bearing on the socio-economic study, discussed below. The Terms of Reference for this study follow:

- Participate in the site selection process.

- Undertake a baseline review, including a literature review, to establish the status quo of agricultural resources within the study area and at each of the two alternative sites.

- Evaluate the data collected, and if necessary, undertake fieldwork to address any shortfalls in the existing data.

- Undertake an assessment to predict potential impacts, as well as their significance, of the proposed power station and associated infrastructure on agricultural potential in the area and at each of the alternative sites.

- Propose mitigation measures that could reduce or eliminate identified impacts.

- If required, liaise with other specialists in order to supplement your study with information from their area of expertise.

- Offer an opinion on which of the two alternatives would be preferable from an agricultural potential perspective.

- Compile a report that reflects the above and includes appropriate soil mapping.

5.3.10 Socio-economic impacts

The proposed power station would have both construction phase and operational phase impacts as well as impacts that have a local and national extent. In fact, there are national socio-economic drivers of the proposed project i.e. to promote growth and development in the country.

This study will investigate and describe the local socio-economic conditions before investigating and describing the direct, indirect and cumulative impacts of the proposed power station and associated infrastructure. The Terms of Reference for the socio-economic study follow:

- Participate in the site selection process.

- Undertake primary and secondary research to establish baseline socio-economic conditions at two alternative sites, including:
    - Engagement with local communities with respect to socio-economic issues (in this regard it may be appropriate to liaise with the public facilitation specialist);
    - Identifying up- and down-stream activities that may be influenced by the proposed power station;
    - Socio-economic and economic profiling for the alternative sites; and
    - Socio-economic and business/ commerce surveys, as required, for each of the alternative sites, in order to update the above-mentioned profiles.

- Undertake a socio-economic and economic impact assessment of the proposed power station taking the two alternative sites into account, and including a consideration of:
    - Both construction and operational phase impacts;
    - Direct and indirect impacts;
    - Induced impacts;
    - Cumulative impacts (additive, synergistic, time crowding and space crowding);
    - Duration of impacts;
    - Mitigation measures to reduce or eliminate predicted negative impacts; and
    - Measures to enhance predicted positive impacts.

- Compile a report that reflects on the above and offers an opinion on a preferred site.

5.3.11 Planning impacts

While coal mining and electricity generation are significant economic forces and form-giving elements in the area, the sustainability of these activities can be questioned. The purpose of the planning study is to determine how the proposed power station and associated infrastructure accords with the local and regional planning framework.

Potential planning impacts will be described in detail and their significance evaluated. Furthermore, the planning study will clarify planning approvals relating to the proposed power station. The proposed Terms of Reference for the Planning study follow:

- Participate in the site selection process.
- Review all baseline planning information for the area, including the relevant Spatial Development Frameworks and Integrated Development Plans.
- Evaluate the implications of the proposed coal fired power station and associated infrastructure within the context of the above-mentioned planning documents.
- Determine if there are any development proposals, policies, township applications and/ or zoning applications approved, or are in the process of being considered for approved for the study area.
- Determine if there any other land use proposals or land claims for the alternative sites and their immediate surroundings.
- Assess the implications that the proposed coal fired power station and associated infrastructure may have for the above-mentioned development/ land use policies, plans, applications, proposals and approvals.
- Provide advice and recommendations with respect to any land use/ planning processes that need to be undertaken as a consequence of existing zoning or town planning schemes.
- If required, liaise with other specialists in order to supplement your study with information from their area of expertise.
- Offer an opinion on which of the two alternative sites would be preferable from a planning perspective.
- Compile a report that reflects the above and includes appropriate mapping.

5.3.12 Traffic impacts

A project of this scale would entail linking access roads to the existing road network and an increase in road traffic, especially during the construction phase. The purpose of this study

would be to describe the baseline conditions and report on what effects the proposed power station would have, during both the construction and operational phases.

The proposed Terms of Reference for the Traffic impact study are as follows:

- Undertake a site visit, taking cognisance of the two alternative sites in the study area.
- Undertake a review of existing information and conceptual plans of the study area.
- Liaise with Eskom to determine proposed road alignments and intersections with existing transport infrastructure during both the construction and operational phases.
- Identify and assess the significance of potential impacts of the proposed power station and associated infrastructure on the existing transport network in the study area.
- Propose mitigation measures that could reduce or eliminate identified impacts.
- If required, liaise with the planning specialist to supplement the study with information from their area of expertise.
- Offer an opinion on which of the two alternatives would be preferable from a traffic impact perspective.
- Compile a report that reflects the above and includes appropriate mapping.

5.3.13 Geotechnical constraints

The underlying geology would influence the exact location of the proposed power station and associated infrastructure. This study would investigate and describe the underlying geology and provide input into the technical issues associated with building such a massive structure. In addition, the results of this study could supplement the groundwater study in identifying preferred locations for the ash dump. The Terms of Reference for this study are as follows:

- Undertake a desk-top study of existing geological and geotechnical information, including published maps, data and aerial photography.
- Liaise with Eskom to attain geological/ geotechnical information from existing power stations in the area.
- Identify and assess the significance of potential geotechnical constraints to the proposed power station and associated infrastructure at each of the two alternative sites.
- Propose mitigation measures that could reduce or eliminate identified constraints.
- Describe how the existing geotechnical conditions at each site could benefit the proposed

project e.g. suitable sites for ash dumping where a layer of rock would prevent possible groundwater contamination.

- Liaise with the groundwater specialist to supplement your study with information from their area of expertise.

- Offer an opinion on which of the two alternatives would be preferable from a geotechnical perspective.

- Compile a report that reflects the above and includes appropriate mapping.

5.3.14 Natural resource considerations

The proposed power station requires water for potable consumption, process water and for cooling, especially of the ancillary infrastructure. Furthermore, as described in Section 3.3.5, relatively large volumes may be required should some air pollution abatement technology be implemented. Accordingly a study, based on existing information, would:

- Obtain and confirm the water requirements of the various components of the power station operation

- Ascertain the sources, quality and surety of water supply in the Witbank region.

As the sorbent required (should FGD technology be implemented) would be supplied from a commercial source, this falls beyond the scope of this EIA process. However, it is proposed to undertake an environmental review of the extraction, transportation and disposal processes to ensure that the full implications of FGD are considered. The environmental audit would entail the following:

- Review of the legal compliance of the mining house;

- Review of the environmental management measures implemented in the sorbent extraction process;

- Review of the environmental management measures implemented in the rail transportation of the sorbent.

6 PUBLIC PARTICIPATION PROCESS

Engagement with Interested and Affected Parties (I&APs) forms an integral component of the EIA process. I&APs will have an opportunity at various stages throughout the EIA process to gain more knowledge about the proposed project, to provide input and to voice any issues of concern.

6.1 PUBLIC PARTICIPATION IN THE EIA

The following figure illustrates the PPP that was envisaged for the Scoping Phase.

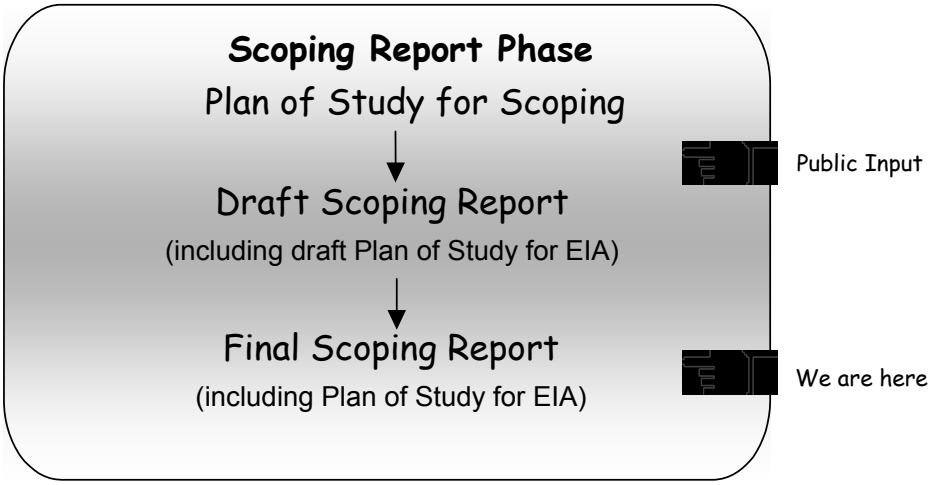


Figure 10: PPP during the Scoping Phase

The Scoping Phase generally has two iterations of public participation – before and after the compilation of the Draft Scoping Report. The first iteration is intended to inform public of the proposed project, register I&APs and note any initial issues of concern or comment. Thereafter the Draft Scoping Report is compiled. The second public iteration is intended to:

- Present the findings of the Draft Scoping Report;
- Register I&APs;
- Note and respond to questions and/ or issues of concern; and
- Present the proposed approach to undertaking the next phase (EIA Phase) of the EIA process.

Given the manner in which this particular EIA process has unfolded, the two iterations described above have been punctuated by additional interactions with I&APs and Key Stakeholders via letter, e-mail, personal visit and telephone. Section 6.2 below describes the steps taken in the PPP to date.

6.2 PUBLIC PARTICIPATION UNDERTAKEN TO DATE

The proposed project was advertised in national, regional and local newspapers (refer to Annexure G for copies of the adverts placed). The aim was to make as many people as possible aware of the project and EIA process and to elicit comment and register I&APs. Thereafter, the PPP focussed only on registered I&APs and the local communities. English adverts were published in the Sunday Times, the Sowetan and The Star while Afrikaans adverts were published in the Rapport and Die Beeld. In addition, adverts in English, Afrikaans, Zulu and Pedi were published in the local newspapers - the Middelburg Observer, the Highvelder and the Witbank News. The adverts appeared between 26 April and 5 May 2006 as follows:

Sunday Times	30 April 2006
Rapport	30 April 2006
Sowetan	3 May 2006
The Star	3 May 2006
Die Beeld	3 May 2006
Middelburg Observer	26 April 2006
The Highvelder	5 May 2006
Witbank News	5 May 2006

In addition to placing newspaper adverts, a Background Information Document (BID), Response Form and Business Reply envelope were sent to 67 identified stakeholders comprising local landowners, local, provincial and national government departments, environmental organisations and mining houses. Refer to Annexure H for a copy of the BID in English, Afrikaans, Zulu and Pedi which was also placed on the Eskom website, www.eskom.co.za/eia. These stakeholders were sent an invitation to a Stakeholder Meeting to present the proposed project to them and give them the opportunity to raise any comments, questions or issues of concern (refer to Annexure I for a copy of this letter). The Response Form and Business Reply Envelopes assisted stakeholders who could not attend the meeting to send their concerns, comments or queries to the EIA team. The Stakeholder Meeting was held at the Protea Hotel in Witbank on 8 May 2006 and was attended by 31 people (refer to Annexure J for a copy of the minutes for the stakeholder meeting).

The purpose of the BID was to provide more information about the proposed project so that stakeholders could participate more effectively in the PPP. In light of new information after the BID was sent out (i.e. knowledge of the full extent of underground coal seams and the existing Kendal power station's expansion plans) the BID was updated and forwarded to I&APs on 8 June 2006. Annexure K contains the updated pages of the amended BID and the amendment letters to stakeholders and I&APs.

6.2.1 Public participation related to the site selection process

When it was decided to revise the site selection process, and Ninham Shand was instructed to undertake this, a letter was sent to all registered I&APs. The letter dated 14 July 2006 informed them of the delay necessitated by the site selection process and is included in Annexure L.

On completion of the site selection process, another letter (dated 7 August 2006) was sent to the registered I&APs and stakeholders informing them that two new sites had been identified, namely Site X and Site Y (Figure 1), and confirming the pending opportunities for participation in the EIA process (please refer to Annexure M). A third revision of the BID was undertaken and a notification letter was sent to additional landowners[12] and I&APs, who were identified after the completion of the site selection process, inviting them to participate in the process (please refer to Annexure N).

6.2.2 Public participation related to the Scoping Phase

All written comment received up to the end of the Scoping Phase is contained in Annexure O. As indicated in the Draft Scoping Report, a record of all issues raised and responses thereto will form an integral part of the Public Participation Process. All the issues that were raised prior to the release of the Draft Scoping Report are reflected in the first Issues Trail (see Annexure P). All I&APs who have registered themselves since the initiation of this project are listed in Annexure Q.

The Draft Scoping Report was released into the public domain (lodging in the Witbank public library, the Nelspruit public library, the Phola public library, the Johannesburg public library and the Kungwini and Delmas municipal offices) on 21 August 2006. In addition it was placed on the Eskom and Ninham Shand websites shortly thereafter. Media notices (in English, Afrikaans, Zulu and Pedi) were placed in the Streek News, the Highvelder, the Middleburg Observer and the Witbank News on 1 September 2006 in order to notify the public of the availability of the Draft Scoping Report and to notify them of the Open Houses and Public Meetings that would be held to present the report to the public. Please refer to Annexure S for copies of the newspaper adverts. Registered I&APs were notified of the availability of the Draft Scoping Report and the Open Houses/ Public Meetings by means of a letter, dated 21 August 2006. The letters to I&APs also included a copy of the executive summary of the Draft Scoping Report. Please refer to Annexure T for a copy of this letter to I&APs.

The Draft Scoping Report was presented to the public at an Open House and Public Meeting held in Witbank on 4 September 2006, an Open House held in Phola on 5 September 2006, and an Open house and Public Meeting held at the El Toro Conference Centre near Kendal later in evening of 5 September 2006. Attendees were provided with an opportunity to ask questions and provide comment on the report.

The comment period ended on 15 September 2006, but submissions up to 26 September 2006 were accepted for those who requested more time. The comments received after the release of the Draft Scoping Report into the public domain, including those raised during the Public Meetings, are presented in the second Issues Trail for this project (please refer to Annexure U). The review consultant, Mark Wood has reviewed the second Issues Trail and his comments can be found in Annexure V.

[12] Some of the directly affected landowners were visited by the environmental practitioner to discuss the project and to hand-deliver the BID and letter of notification. In this regard, the valuable assistance of Andre van Rensburg and Carolus van Aardt (Generation Properties Management, Witbank) in identifying and visiting landowners is acknowledged.

It must be noted that attaining landowner information and contact details has proven to be exceptionally difficult. A conveyancer was appointed to assist in this regard as soon as it was realised that conventional means of eliciting landowner information (site visits and contact with the deeds office) only yielded partial success. The conveyancer also experienced difficulty in attaining information but was able to supplement our existing database. New landowners in Site X were brought to our attention in mid September 2006 and letters of notification and the BID Version 3 were sent to them on 15 September 2006 (please refer to Annexure R).

For ease of reference, all correspondence to date is summarised in Table 1 below.

Table 1: Summary of correspondence to date

Project Activity	Dates	Notices	Letters	Documents	Meetings
Project Initiation	March-April 2006				Meetings with authorities
Initiation of Public Participation	30 April – 5 May 2006	Newspaper adverts • Sunday Times • Rapport • Sowetan • The Star • Die Beeld • Middelburg Observer • The Highvelder • Witbank News	Notification of project & invitation to stakeholders meeting	BID Version 1	
	8 May 2006			Minutes of Stakeholder meeting	Key Stakeholder Meeting (Witbank)
	2 May – 30 June 2006		Letter to register I&APs		
Site B Changes location	14 July 2006		Letter to all I&APs notification of changes	BID Version 2	
External Review requires revised site selection process	7 August 2006		Letter to all I&APs notification of new site selection process		
	10 August 2006		Letter to all I&APs notification of new sites X&Y		
	14 August 2006		Letter to new landowners and identified I&APs	BID Version 3	
Preparation of Draft Scoping Report	May – August 2006			Issues trail	
Draft Scoping Report released for public comment	21 August 2006		Letters to all I&APs notifying of DSR & Public meetings	Executive Summary of DSR Lodging of DSR	

Project Activity	Dates	Notices	Letters	Documents	Meetings
	1 September 2006	Adverts in local press • Middelburg Observer • The Highvelder • Witbank News			
	15 September 2006		Letters to new landowners (identified by conveyancer)	BID Version 3	

6.3 PUBLIC PARTICIPATION WAY FORWARD

This Final Scoping Report will be submitted to DEAT for their consideration. In reviewing the Final Scoping Report, DEAT will also review the Plan of Study for EIA (PoSEIA), which outlines the proposed approach to the next phase of the EIA process.

Letters will be posted to all registered I&APs informing them of the finalisation of the Scoping Report and providing them with minutes of the Public Meetings. The Final Scoping Reports will be lodged at the same venues as the Draft Scoping Report.

The findings and reporting associated with the EIA Phase will be presented to the public and I&APs in due course. It is envisaged that the Draft EIR, including the specialist studies, will be made available to the public in early to mid November 2006.

7 CONCLUSION AND WAY FORWARD

This Final Scoping Report has been informed by the issues and concerns raised by the Public Participation Process to date as well as issues raised by authorities, the proponent (Eskom) and by the environmental team. It has presented the context and rationale for the project, described the project components and screened the suite of possible alternatives and environmental implications.

In response to the scoping undertaken, and input from specialist subconsultants, Eskom, the relevant authorities and I&APs, the EIA team propose that the following specialist studies are undertaken:

- Geotechnical study
- Traffic study
- Air quality study
- Visual study
- Noise impact study
- Terrestrial ecology study
- Aquatic ecosystem study
- Groundwater study
- Risk study
- Heritage study
- Agricultural potential study
- Socio-economic study
- Planning study

Specifically, the Scoping Report has determined the scope of work and level of details of each of the above investigations. These are described in the PoSEIA (Annexure F).

As discussed in Section 3.3, the following alternatives are proposed to be taken forward to the next phase of the EIA process for detailed assessment:

- Two alternatives sites (refer to Figure 1);
- Layout alternatives within each site;
- Above ground ash dumping, in-pit ashing and back ashing;
- Wet and dry FGD processes;
- Direct and indirect dry cooling systems;
- Alternative alignments for the coal conveyor belt from the coal mine to the proposed power station (these alternatives depend on the location of the coal pithead);
- Alternative means of transporting sorbent to the proposed power station;
- Alternative alignments for the water supply pipeline from the existing Kendal power station; and
- Alternative alignments for the access road between the proposed power station and the existing road network.

Details regarding the proposed public participation process for the EIA Phase are discussed in the PoSEIA.

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ANNEXURE A
Site Selection Report

ANNEXURE B

Specialist review of Draft Scoping Report

ANNEXURE C

DEAT's acceptance of Plan of Study for Scoping

ANNEXURE D

Letter from DWAF re availability of water

ANNEXURE E
CVs of specialists

ANNEXURE F
Plan of Study for EIA

ANNEXURE G
Media notices

ANNEXURE H
Original Background Information Document

ANNEXURE I
Initial correspondence with I&APs

- **Letters to identified I&APs**
- **Letters acknowledging registration**

ANNEXURE J
Minutes of key stakeholder meeting

ANNEXURE K

Revised BID and associated letters to stakeholders and I&APs

ANNEXURE L
Notification of project delay

ANNEXURE M

Notification of revised site selection process and new sites

ANNEXURE N

Second revision of BID and associated notification letters

ANNEXURE O

Copies of written comment received to date

ANNEXURE P

Issues Trail

ANNEXURE Q

List of I&APs

ANNEXURE R

Letter to newly identified landowners

ANNEXURE S

Newspaper adverts re Open Houses and Public Meetings

ANNEXURE T

Letter to I&APs re second round of public engagement

ANNEXURE U

Issues Trail 2

ANNEXURE V

Review of Issues Trail 2

REPORT DISTRIBUTION CONTROL-SHEET

JOB NAME: Kendal EIA
PROJECT NUMBER: 401281
REPORT TITLE: FInal Scoping Report
NS REPORT NUMBER: 4222/ 4001281
DATE: October 2006

Copy Number	Person	Organisation	Sender's signature
1 to 5 of 14	Peter Ngoasheng	DEAT	
6 of 14	Tobile Bokwe	Eskom Gx	
7 of 14	Agnes S Mabena	Phola Library	
8 of 14	Janine Smith	Witbank Library	
9 of 14	Octavia Vikalala	Nelspruit Library	
10 of 14	Granville Henker	Johannesburg Central Library	
11 of 14	The Municipal Manager	Kungwini Municipal Office	
12 of 14	The Municipal Manager	Delmas Municipal Office	
13 of 14	Brett Lawson	NS George	
14 of 14	Irma Liberty	NS Library	

NINHAM SHAND/Tuesday, 10 October 2006/I:\PROJECT\ENVIRO\PROJECTS\401281~Kendal EIA\R30~Scoping Phase\Report\FINAL SCOPING REPORT\FINAL Scoping Report 041006.doc