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# MOSSEL BAY OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION AND TRANSMISSION LINES

Plan of Study for Scoping

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## MOSSEL BAY OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION AND TRANSMISSION LINES Plan of Study for Scoping

#### 1 BACKGROUND TO THE STUDY

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. Optimising their return on investment and assessing opportunities for applying new technologies are major informants in such strategic planning.

In the most recently approved ISEP plan of June 2003, the need for increased electricity supply by about 2007 was identified. This is to meet the gradual annual growth of about 3% in demand, coupled with moderate generating reserves. Reinstating power stations that had been mothballed is a desirable option, while various other options, ranging from plant using conventional hydrocarbon and nuclear fuels to renewable energy sources, receive continued attention.

As part of the bringing on stream of increased electricity supply, Open Cycle Gas Turbines (OCGTs) were identified as a means to provide peaking capacity in the short term. An important consideration in this decision was the short turn around time envisaged for this project, to make commercial supply available within a limited time.

As a consequence of this forward planning process, an OCGT plant<sup>1</sup> is proposed adjacent to the PetroSA facility (ex-Mossgas) near Mossel Bay. The Mossel Bay OCGT plant would be fuelled with kerosene from the adjacent PetroSA gas-to-liquid (GTL) facility. A substation is required to allow for two transmission lines of 400kV capacity each to tie in with the existing transmission system network.

#### 2 LEGAL REQUIREMENTS

# 2.1 THE ENVIRONMENT CONSERVATION AND NATIONAL ENVIRONMENTAL MANAGEMENT ACTS

"The construction, erection and upgrading of facilities for commercial electricity generation with an output of at least 10 megawatts and infrastructure for bulk supply" and (with regard to any substance which is dangerous or hazardous and is controlled by national legislation), "the construction, erection and upgrading of:

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<sup>&</sup>lt;sup>1</sup> Two OCGT plants are proposed in the Western Cape: one at Atlantis, near Cape Town, and the other near Mossel Bay. The environmental process for the Atlantis OCGT plant will be undertaken as part of a separate process.

- Infrastructure, ..., for the transportation of any such substance; and
- Manufacturing, storage, handling, treatment or processing facilities for any such substance"

are listed as activities with the potential to cause a substantial detrimental effect on the environment (Regulation 1182 of the Environment Conservation Act [No 73 of 1989]). Accordingly, the proposed OCGT plant and associated infrastructure require authorisation from the competent environmental authority via the Environmental Impact Assessment (EIA) process outlined in Regulation 1183.

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 in terms of Regulation 1183<sup>2</sup>. These include:

- *"the construction, erection and upgrading of roads";* and
- *"the change of land use from:* 
  - agricultural or zoned undetermined use or an equivalent zoning to any other land use; and
  - use for nature conservation or zoned open space to any other land use".

The approach outlined in this Plan of Study for Scoping has been developed to meet the requirements of the Environment Conservation Act as well as the principles of the National Environmental Management Act (No 107 of 1998). This will culminate in a Scoping Report and Plan of Study for EIA, which would outline the remainder of the EIA process. The successful conclusion of the EIR phase<sup>3</sup> (as guided by the Scoping Report and Plan of Study for EIA) would result in DEAT issuing a Record of Decision, which would be advertised in the required manner.

#### 2.2 ADDITIONAL REQUIREMENTS

In addition to the Environment Conservation and National Environmental Management Acts, the proposed activities are likely to require authorisations/ permits in terms of a range of other legislation with environmental bearing, including:

- The National Heritage Resources Act (No. 25 of 1999);
- The National Water Act (No 36 of 1998); and
- The Minerals and Petroleum Resources Development Act (No 28 of 2002).



<sup>&</sup>lt;sup>2</sup> Any application submitted to the environmental authority would encompass the full range of listed activities as outlined in this Plan of Study.

<sup>&</sup>lt;sup>3</sup> Refer to Section 3 for an overview of the terminology used in this document

#### 3 PURPOSE OF THIS PLAN OF STUDY FOR SCOPING

This Plan of Study for Scoping has been compiled in terms of the "Directorate: Environmental Management: EIA Guideline series ~ Guideline for the Plan of Study for Scoping" (DEA&DP<sup>4</sup>, 2001) and the "Guideline Document: EIA Regulations ~ Implementation of Sections 21, 22 and 26 of the Environment Conservation Act" (DEAT<sup>5</sup>, 1998) and its purpose is to ensure that the Scoping process and product satisfies the requirements of DEAT<sup>6</sup> and DEA&DP.

The Plan of Study for Scoping covers the following aspects:

- A description of the activity;
- A description of the tasks to be performed; and
- A proposed programme.

In addition to the aforementioned aspects, consideration is also given to the question of alternatives, the legal requirements and the Ninham Shand environmental team personnel who would undertake the Scoping investigation.

It is our understanding that the nature of the activities and the likely public interest dictate that a complete EIA process would be required for the OCGT plant and associated infrastructure. The EIA process is composed of three phases:

- The Initial Application Phase<sup>7</sup>;
- The Scoping Report Phase; and
- The Environmental Impact Report or EIR Phase

This Plan of Study for Scoping outlines the anticipated process and products for the Scoping Report phase of the EIA process.

#### 4 THE PLAN OF STUDY FOR SCOPING

#### 4.1 DESCRIPTION OF THE ACTIVITY

#### 4.1.1 General

The objective of the Eskom OCGT proposal is to provide peaking power in the short term while long term plans are formulated to meet projected electricity demands.

To meet this objective, two OCGT plants are proposed in the Western Cape. This Plan of Study for Scoping refers only to the OCGT plant proposed for Mossel Bay. The power plant is located so as to be relatively close to the PetroSA GTL plant



<sup>&</sup>lt;sup>4</sup>Western Cape Department of Environmental Affairs and Development Planning

<sup>&</sup>lt;sup>5</sup> National Department of Environmental Affairs and Tourism

<sup>&</sup>lt;sup>6</sup> DEAT has been identified as the lead authority for this project, although they will consult extensively with provincial department (DEA&DP) in their decision-making.

<sup>&</sup>lt;sup>7</sup> This entailed the submission of the DEA&DP Application Form and Scoping Checklist.

(which would supply kerosene fuel to the OCGT power plant) and to the Proteus substation (which would transmit the generated electricity into the national grid). The project thus comprises the following:

- The construction of the OCGT power plant (and associated substation) to supply up to 1000 MW of electricity;
- The construction of a fuel supply pipeline to carry kerosene from PetroSA to the OCGT power plant; and
- The erection of a 400 kV substation and two single circuit 400 kV transmission lines to transmit electricity from the OCGT power plant to the Proteus Substation (a distance of approximately 15 km).

The construction phase of the proposed project is anticipated to last approximately 18 months.

#### 4.1.2 The environmental process

In February 2005, Eskom Holdings Ltd. appointed Ninham Shand to undertake the requisite environmental investigations associated with the aforementioned project. The scope of work for Ninham Shand's appointment is as follows:

- Undertake an EIA process for the Mossel Bay OCGT power plant, fuel supply pipeline, substation and transmission lines; and
- Develop an Environmental Management Plan (EMP) for the construction, operational and decommissioning phases of the proposed OCGT plant.

#### 4.2 CONSIDERATION OF ALTERNATIVES

A requirement of the environmental regulations is due consideration of appropriate alternatives. As part of Eskom's ISEP process, several supply options, including coal fired plant, pumped storage schemes, gas-fired plant and renewable energy technology, are being investigated. However, ISEP has identified a need to meet electricity demands in the short term. OCGT power plants were targeted as an interim option to meet this demand. An internal Eskom Screening Report has already screened possible sites for the location of the OCGT power plants. Two sites in the Western Cape were identified, viz. Atlantis and Mossel Bay. The OCGT power plant at Mossel Bay is the subject of this EIA process.

It is important to note that for this project, the consideration of alternatives occurs on two levels: (1) a strategic level investigation of alternative technologies and sites was undertaken during the ISEP and subsequent site screening processes, and (2) on a project level, alternatives will be considered as part of the EIA process. Integrated Environmental Management (IEM), as well as international best practice, prescribes a holistic view of the environmental inputs into projects, starting at project inception and ultimately culminating at project decommissioning. Accordingly, although the ISEP and Eskom internal site screening processes occurred before the beginning of

the EIA process, they should be viewed as an extension of the legislated EIA requirements as they form an integral part of the information necessary to facilitate informed decision-making. Eskom's ISEP and site screening processes will be thoroughly vetted and the results ratified by the Environmental Team before presenting the results to the public and authorities.

Besides the vetting and ratifying of the ISEP and screening processes mentioned above, the "no-development" option will not be considered. More detailed information regarding alternatives (including alternative technologies, processes and routes/ sites) will follow during the EIA Process.

#### 4.3 DESCRIPTION OF SCOPING TASKS

#### 4.3.1 Project Inception

The main steps and associated activities in the project initiation phase are described below.

#### 4.3.1.1 Initial discussions with the Proponent

This is to ensure a thorough understanding of the project and of the proposed process to be undertaken. The first Inception Meeting with the proponent occurred on 2 February 2005.

#### 4.3.1.2 Completion and submission of Application Form and Scoping Checklist

This is to facilitate compliance with the procedural requirements. An Application Form and Scoping Checklist (AF&SC) was completed and faxed to DEA&DP on 3 March 2005. The original AF&SC was posted to DEA&DP on 8 March 2005.

#### 4.3.1.3 Meeting with the competent authority

This is to facilitate compliance with the procedural requirements and to agree conceptually on the proposed approach outlined in this Plan of Study for Scoping.

Although DEAT has been identified as the lead authority for this project, this environmental process ensures effective communication with all relevant local, provincial and national authorities who are likely to have an interest in, or be in a position to provide input into, the process. Accordingly, the following key authorities have been included in the environmental process:

- Provincial Department of Environmental Affairs and Development Planning, George Office;
- Mossel Bay Municipality: Planning Department.
- Department of Trade and Industry



- Department of Water Affairs and Forestry;
- Department of Public Enterprises;
- Provincial Department of Economic Development & Tourism;
- Heritage Western Cape;
- Cape Nature; and
- Department of Minerals and Energy (DME).

These authorities will be informed of the start of the EIA process and a Scoping meeting(s) arranged to ensure that they have a thorough understanding of the project and to ensure that the Environmental Team has a clear understanding of their requirements.

#### 4.3.1.4 Literature Review

Available baseline information would be collected by means of a literature review. The proponent, specialists and consultants would be contacted to ensure that existing written information and local knowledge is accessed.

#### 4.3.1.5 Specialist Scoping Site Assessment

A specialist scoping assessment of the proposed OCGT power plant site was undertaken on 23 February 2005, to facilitate an understanding of aspects such as:

- Biophysical impacts:
  - vegetation and fauna;
  - natural resources; and
  - o sensitive areas.
- Social impacts:
  - o surrounding land uses;
  - visual/ aesthetic issues;
  - o noise issues; and
  - o cultural/ historical/ archaeological resources.
- Construction issues.
- Operation and maintenance issues.

The information gathered from the site visit would be used in the identification of potential impacts.

#### 4.3.2 Public Participation Process

The purpose of the Public Participation Process would be to provide Interested and Affected Parties (I&APs) with adequate opportunity to have input into the environmental process. The public participation process would include the following:



#### 4.3.2.1 Initial public consultation

The initial public consultation comprises meeting with identified key stakeholders and with the broader public in order to present the proposed project to them and elicit issues of concern.

#### Key stakeholders

Identified stakeholders, *viz.* affected landowners and local authorities, have been contacted and were met with on 24 February 2005. The purpose of this meeting was to inform them of the proposed project and of the start of the EIA process. Their concerns were noted and will feed into the Scoping process.

Other key stakeholders have been identified and will be invited to a key stakeholder meeting, which is envisaged to be held on the morning or early afternoon of the Open Day and Public Meeting. Identified key stakeholders include:

- Wildlife and Environment Society of South Africa (WESSA);
- Voelvlei Farmers Union;
- The Gouritz Initiative;
- Cape Nature;
- Local and district planning authorities;
- PetroSA;
- DEA&DP;
- DEAT; and
- Ward councillors

A detailed Background Information Document (BID) will be compiled and posted to key stakeholders together with an invitation to the stakeholder meeting. The BID would provide a background to the project and outline the purpose and scope of the EIA process.

#### The Broader Public

The public would be notified of the initiation of the environmental process and invited to the Public Open Day and Meeting via advertisements in local, regional and national newspapers and posters at key locations. The purpose of this advertising would be to notify the public of the EIA process and invite all I&APs to register themselves. In addition, the adverts would notify I&APs that a BID is available on the Eskom website and via post on request. Correspondence after the press adverts would only be directed to registered I&APs. The initial media advertising would be as follows:

- Nationally: Adverts in the Sunday Times and Rapport;
- Regional: Adverts in the Cape Times and Die Burger; and
- Local: Adverts in the relevant community newspapers.



An I&AP database would be compiled which would include identified key stakeholders and members of the public who register in response to the press advertisements.

#### Public engagement

Issues raised during the initial key stakeholder meeting, Open Day and Public Meeting will be captured and included in the draft Scoping Report. The draft Scoping Report would include copies of all comments received, provide a summary of the issues raised, and reflect on the means by which the issues are to be addressed by the EIA process. Where relevant, the EIA process, specialist studies and reporting may be revised to make allowance for particular issues and concerns.

#### 4.3.2.2 Public Comment on the draft Scoping Report

Following the completion of the draft Scoping Report, copies of the report would be lodged at appropriate venues, e.g. key public libraries/ municipal offices and on the Eskom project website. All registered I&APs will be notified of the lodging of the report and be provided with copies of the Executive Summary by mail. The public would have a three-week period in which to comment on the Draft Scoping Report.

During this comment period a second Public Meeting will be held to present the draft Scoping Report and to elicit feedback from the public. An advert in the relevant local newspaper and letters to registered I&APs would provide notification of the Public Meeting. I&APs will be notified of the Public Meeting at the same time as the lodging of the draft Scoping Report and invitations to comment on the report.

The public process and comments elicited by the release of the draft Scoping Report will be consolidated into an Issues Trail for inclusion in the draft EIR. The Issues Trail would include copies of all of the submissions received, as well as a detailed summary of the issues raised and the Environmental Team's/ proponent's responses thereto. Where relevant, the EIA process may be revised to make allowance for particular issues and concerns

#### 4.3.2.3 Dispute Resolution

Section 24(7) of the National Environmental Management Act specifically requires *"conflict resolution in all phases of the investigation and assessment of impact"*. However, since EIAs entail an objective assessment of the environmental implications of development proposals and public comment is simply an informant of such assessment, there is little opportunity for effective dispute resolution. This notwithstanding, limited opportunity will be provided for the resolution of conflicts. All comment received by I&APs will be addressed in the EIA documentation. Depending on the nature of any particular I&AP submission, these may evoke a revised assessment in the EIA or result in a technical modification to the proposed project design.



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#### 4.3.3 Scoping Report

The purpose of the Scoping Report would be to provide an overview of the project, a screening of the potential positive and negative environmental impacts and the proposed approach for the EIR stage. The Scoping Report would include the following:

- A description of the activities that form the subject of the EIA process;
- A description of the affected environment;
- An overview of the legal requirements which have necessitated the EIA process;
- A detailed description of the process followed to date, including the previous and current environmental and planning processes (ISEP and Eskom site screening process) as well as the public participation process conducted as part of the EIR stage;
- A summary of the proposed strategic-level alternatives considered in the ISEP and Site Screening Report;
- A summary of the proposed project-specific alternatives; and
- A summary of all of the potential environmental impacts identified during Scoping and a preliminary evaluation of their likely significance. On the basis of this preliminary evaluation the potential environmental impacts would be screened to identify those for detailed consideration during the EIR stage.

All public comments would be consolidated in the Issues Trail as an annexure of the Scoping Report. This would summarise the issues raised and provide responses thereto. The proponent and Ninham Shand would provide these responses.

The Scoping Report would be finalised in light of the public feedback received and the Final Scoping Report submitted to DEAT and DEA&DP. At this stage we propose to undertake a site visit with DEAT and DEA&DP to provide an overview of the report and expedite the decision making process.

#### 4.3.4 Plan of Study for EIR

The Scoping Report would provide the basis for drafting a detailed Plan of Study for EIR, which would outline the proposed approach to the EIR stage.

#### 4.4 **PROPOSED PROGRAMME**

Refer to Annexure A for a summary of the proposed programme.



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#### 5 PERSONNEL

#### 5.1 NINHAM SHAND

*Mike Luger,* a Director and the Environmental Discipline Head based at the Cape Town Office, has over eleven years of experience in the field of Integrated Environmental Management, both on a project and management level. Mike will act as Project Director and provide input at strategic intervals.

**Brett Lawson** has an MA in Environmental and Geographical Science, as well as diplomas in wildlife management, business management, environmental management and environmental auditing. He thus has considerable multi-disciplinary experience across the range of environmental sciences. Brett will act as Project Manager and be responsible for the day-to-day running of the project.

**Dr** Andrew Spinks, a Associate in the Cape Town Office, has a Doctorate in Zoology and undergraduate training in Botany. He has compiled and managed numerous environmental investigations, including Environmental Impact Assessments, Environmental Management Programme Reports and environmental constraints and opportunities reports. Dr Spinks has a particular interest in EMPs for civil construction activities, and has been intimately involved in integrating the EMP into the Tender Documentation. Andrew will play a role in compiling the construction phase EMP.

**Barend Smit**, an Associate of Ninham Shand and Head of Environmental Section in the Centurion Office, has over 15 years experience in the environmental field, including Environmental Impact Assessments, compilation and implementation of management plans and ISO 14000 Environmental Management Systems as well as environmental auditing, landscape design, tendering and construction supervision and rehabilitation of landscapes. Barend will assist Andrew in compiling the EMP.

*Kamal Govender*, is an Environmentalist Practitioner in the Cape Town Office. He completed an MSc degree in Environmental and Geographical Science at the University of Cape Town in 2004. Since joining Ninham Shand in 2000, he has been involved in the development of various Environmental Impact Assessments, the development and monitoring of Environmental Management Plans, and several Public Participation Processes. Kamal will assist Brett in the day-to-day running of the project.

*Nicole Zimmermann*, a Senior Environmental Scientist in the Cape Town Office, has a BSc (Honours) degree in Environmental and Geographical Science at the University of Cape Town. She has compiled and been involved in the management of numerous environmental investigations including Environmental Impact Assessments, Environmental Management Plans (EMP) and Environmental Management Systems (EMS). Nicole will provide assistance as and when necessary.



#### 5.2 THE ENVIRONMENTAL PARTNERSHIP

*Carmen du Toit* has a MPhil in Environmental Management from Stellenbosch University and a BA Honours degree in Environmental and Geographical Science, and a Higher Diploma in Education, from the University of Cape Town (UCT), as well as diplomas in Risk Assessment, Environmental Management Systems and Environmental Law. She is registered as a Professional Natural Scientist with SACNASP. She spent two and a half years at Eskom where she was instrumental in initiating and implementing regional and national environmental management systems in accordance with SABS ISO 14001. These included Environmental Impact Assessments, Environmental Management Plans, Environmental Risk Assessments and running Environmental Management Programmes. Carmen will be undertaking the EIA process.

*Karen-Dawn Koen* is an environmental practitioner with a BA Honours degree in Geography from the University of the Western Cape. She also holds a certificate in Environmental Auditing. Karen has five years experience in environmental research and management, having previously been employed by Eskom's Western Distribution Region, by Arcus Gibb consulting engineers in Cape Town and by the Western Cape Investment and Trade Promotion Agency (WESGRO). Karen will assist Carmen in undertaking the EIA process.

#### 5.3 MARK WOOD CONSULTANTS

*Mark Wood* has spent most of the past 18 years leading EIAs for major development projects. Of these projects, many have involved installations that are hazardous and controversial in the absence of careful and effective environmental planning. He has, for example, recently led the EIA team for all of the upstream EIAs (three separate projects) of Sasol's Natural Gas Project, including exploration, the development of the onshore gas fields and the transport of the gas from Mozambique to South Africa in an 860 km underground pipeline. He is currently a review consultant for the three largest transportation infrastructure project proposals in South Africa, and project auditor for the Bakwena Platinum Highway Project. He has extensive experience in both urban and rural environmental and social evaluation. Mark will provide internal review function for the EIA process.

#### 5.4 AIRSHED PLANNING PROFESSIONALS

*Lucian Burger* is currently the Managing Director of Airshed Planning Professionals (Pty) Ltd and Director of Ilitha Riscom (Pty) Ltd. He completed his bachelor's degree (cum laude) in chemical engineering in 1982. His postgraduate studies (MSc Eng and PhD) were specifically focussed on the development of dispersion modelling theory and related software applications. Lucian has been involved in numerous atmospheric dispersion studies locally and internationally, ranging from environmental impact assessments, risk and hazard assessments, meteorological

studies, process designs, to the development of toxic gas evacuation response systems, and other related software. Lucian will undertake the air quality impact assessmnet.

#### 5.5 JONGENS KEET ASSOCIATES

**Adriaan Jongens** an acoustical engineering consultant since 1971 and senior lecturer at the University of Cape Town, has undertaken environmental noise impact assessments for mining and industry throughout South Africa, Namibia and in the Netherlands. Furthermore, he is a member of the SABS technical committee for Acoustics and Noise Abatement and the International Standards Organisation, TC43 Working Group 38. Adriaan will undertake the noise impact assessment.

#### 5.6 CHITTENDEN NICKS DE VILLIERS

**Tanya De Villiers** has more than 12 years experience as a landscape architect, has thorough knowledge of working as part of an interdisciplinary team, and is able to take responsibility for the design and coordination of a large variety of projects. Tanya will undertake the visual impact assessment.

#### 5.7 NICK HELME BOTANICAL SURVEYS

*Nick Helme* is based in Cape Town and since mid 1997 has been working as a specialist botanical consultant, specialising in the diverse flora of the south-western Cape. He has undertaken over 450 botanical assessments of proposed development sites, many of these for electricity distribution projects. Nick will undertake the botanical impact assessment.

#### 5.8 ARCHAEOLOGY CONTRACTS OFFICE

*Tim Hart* has been involved in a wide rage of archaeological projects ranging from excavation of fossil sites to the conservation of historic buildings, places and industrial structures. Together with team members, he has also been involved in heritage policy development and development of the profession. He has teaching experience within a university setting and has given many public lectures on archaeology related matters. Tim will undertake the heritage/cultural impact assessment.

#### 5.9 URBAN-ECON DEVELOPMENT ECONOMISTS

**Ms Alex Kempthorne** joined the firm six months after the completion of her Masters Degree in City and Regional Planning. In the period before this she contracted for Jonathon Holtmann and Associates. Ms Kempthorne has gained considerable experience in development economics with high profile property projects in the Western Cape, such as Youngsfield, Milnerton, Bellville and Voortrekkerweg. Alex will undertake the socio-economic impact assessment.

Copies of the relevant CV's are available on request.



#### 6 CONCLUSION

In summary, scoping begins with gaining a thorough understanding of the proposed project, submitting the Application Form and Scoping Checklist, undertaking a literature review and undertaking a specialist scoping site visit. The Public Participation Process also begins during Scoping and entails: (1) meeting with identified stakeholders/ roleplayers and other I&APs; (2) advertising in national, regional and local newspapers; and (3) distributing the Background Information Document. Issues raised during this initial public consultation will be captured in the Draft Scoping Report, which will be presented at the second Public Meeting.

The Scoping Report will: (1) provide an overview of the project; (2) identify potential impacts; and (3) propose the approach to be followed in the EIR stage.

The Draft Scoping Report would be finalised in light of public feedback and submitted to the competent environmental authority.

We trust that this meets the need for an equitable Plan of Study for Scoping and await your response.



### ANNEXURE A: PROPOSED PROJECT PROGRAMME

