

ENVIRONMENTAL IMPACT ASSESSMENT:

Proposed Open Cycle Gas Turbine Power Plant, Fuel Supply Pipeline, Substation and Transmission Lines at Mossel Bay

FINAL SCOPING REPORT

Prepared by



THE ENVIRONMENTAL PARTNERSHIP

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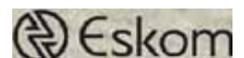
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June 2005

PROJECT DETAILS

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| CLIENT | Eskom Holdings Ltd (Eskom Transmission Division and Eskom Generation Division) |
| PROJECT NAME | Mossel Bay OCGT EIA |
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ACRONYMS

| | |
|-----------------|---|
| BID | Background Information Document |
| DEA&DP | Department of Environmental Affairs and Development Planning (provincial) |
| DEAT | Department of Environmental Affairs and Tourism (national) |
| ECA | Environment Conservation Act (No. 73 of 1989) |
| EIA | Environmental Impact Assessment |
| EMP | Environmental Management Plan |
| EIR | Environmental Impact Report |
| GTL | Gas-to-liquid |
| HIA | Heritage Impact Assessment |
| HWC | Heritage Western Cape |
| I&APs | Interested and Affected Parties |
| IEP | Integrated Energy Plan |
| IEM | Integrated Environmental Management |
| ISEP | Integrated Strategic Electricity Planning |
| Km | Kilometer |
| kV | Kilovolts |
| m | Metres |
| m ³ | Cubic metres |
| MW | Megawatt |
| NEMA | National Environmental Management Act (No. 107 of 1999) |
| NER | National Electricity Regulator |
| NIRP | National Integrated Resource Plan |
| NO _x | Oxides of nitrogen |
| OH | Open House |
| OCGT | Open Cycle Gas Turbine |
| ppm | Parts per million |
| RoD | Record of Decision |
| ToR | Terms of Reference |
| VIA | Visual Impact Assessment |

SUMMARY

BACKGROUND AND INTRODUCTION

Eskom has commissioned an Environmental Impact Assessment (EIA) for a proposed Open Cycle Gas Turbine (OCGT) power plant and associated activities in the Mossel Bay area. This Final Scoping Report serves as the documentation in support of the Scoping Phase of the EIA procedure being carried out. It will be followed by documentation that addresses the EIA Phase as the process unfolds.

The need to expand the electricity generation capacity in South Africa is essentially based on the following strategic documentation and policies:

- South Africa's White Paper on the Energy Policy - 1998
- Integrated Energy Plan - 2003
- National Integrated Resource Plan - 2003/2004
- Integrated Strategic Electricity Planning - 2003

As a consequence of the above-mentioned forward planning process, two OCGT power plants are proposed in the Western Cape, one in Atlantis north of Cape Town and the other adjacent to the PetroSA facility (previously known as Mossgas) near Mossel Bay. This EIA is being undertaken for the activities relating to the proposed OCGT power plant, fuel supply pipeline, substation and transmission lines at Mossel Bay. Ninham Shand Consulting Services is the lead consultant for the EIA, assisted by The Environmental Partnership.

The proposed OCGT power plant would be located approximately 13km west of the town of Mossel Bay and approximately 1km northwest of the PetroSA facility. A fuel supply pipeline would be required between PetroSA and the OCGT power plant. Two overhead transmission lines would also be needed to connect the OCGT power plant to the existing Proteus substation, which is located approximately 10km northwest of the proposed power plant site.

PROJECT DESCRIPTION

The proposed project comprises the following components:

- The OCGT power plant (made up of three or four gas turbines with an output of 150 to 250 MW each) adjacent to the existing PetroSA facility.
- A fuel supply pipeline to transport kerosene from the PetroSA facility to the OCGT power plant;
- A substation adjacent to the OCGT power plant, to distribute the generated electricity to the transmission lines;
- Two 400kV transmission lines to run from the OCGT substation to Proteus substation, thus feeding the generated electricity into the national grid;
- Upgrading of the Proteus substation within the boundaries of the substation; and
- An access road from the N2 National Road to the proposed OCGT power plant and substation site.

Open Cycle Gas Turbine Power Plant

The proposed project entails constructing an OCGT power plant, which produces electricity by means of hot gas driving a turbine that in turn powers a generator. It is envisaged that the OCGT power plant would operate for an average of two hours each morning and evening. This,

however, is dependent on electricity demand and system requirements. It could thus be necessary to operate for up to eight hours at a time. The objective of the OCGT power plant is to provide peaking power within a relatively short time after starting the plant. Peaking capacity refers to those periods in the mornings and evenings when electricity demand is at its greatest.

Open Cycle Gas Turbine Power Plant Extent and Layout

The proposed OCGT power plant and transmission substation site is approximately 370m by 630m in extent and will therefore occupy about 25ha¹. The highest structures of the plant are the emission stacks, likely to be about 30m high but dependent on the outcome of a specialist air quality study. The intention is to install three or four turbines of 150 to 250MW each, with a maximum combined output of 1000MW. The fuel in this case would be kerosene supplied by PetroSA.

Emission Control Measures Relating to the OCGT Power Plant

Although the OCGT power plant is considered a 'clean' technology in comparison to coal-burning power stations, it produces emissions such as oxides of sulphur, oxides of nitrogen (NO_x) and greenhouse gasses e.g. carbon dioxide. The exhaust gasses of the OCGT power plant would be discharged to the atmosphere through the stacks mentioned above. It is our understanding that NO_x emissions are the important issue of concern related to air quality, as emission levels of oxides of sulphur and carbon would be well below DEAT guidelines.

Fuel Supply Pipeline

The intention is to source the fuel, in this case a form of kerosene, required to operate the OCGT power plant from PetroSA. In order to supply the power plant with the kerosene, a fuel pipeline of approximately 3 to 5km between PetroSA and the OCGT power plant would need to be constructed. The proposed pipeline would be installed above the ground as a safety precaution. Two alternative routes have been identified (see *Road Access to OCGT Power Plant* below).

Transmission Substation

A proposed transmission substation would occupy an area adjacent to the OCGT power plant within the identified 25ha area. The purpose of the transmission substation is to feed the generated electricity to the transmission lines which then feed into to the Proteus substation. The substation would consist of three 400kV transformers with their associated infrastructure and steelwork.

Transmission Powerlines

In order to connect the proposed OCGT power plant to the existing transmission network, two 400kV overhead powerlines would be required between the power plant and the existing Proteus substation.

Proposed Transmission Lines Route Alignments

Three route alignments have been identified. For all the alternatives, the two transmission lines would run parallel to each other within the minimum required combined servitude. The servitude would be owned by Eskom, but would allow some activity to occur beneath the transmission

¹ Note that during the formulation of this project, the extent of the power plant and substation site was determined as approximately 9ha. Due to a revision in the extent of the substation component, this area has been increased to approximately 25ha.

lines. All the alternatives would have to enter the Proteus substation at its north-western side, since the only vacant space available for the purpose is located there.

Route Alignment - Alternative 1

The two transmission lines would exit the OCGT power plant on its northern side and run in a north-north-westerly direction towards the R327 for approximately 2km. Thereafter the proposed route runs adjacent to the R327 for the remaining 10km to where it ends at Proteus substation. This alternative crosses farmland before forming part of an existing utility corridor comprising a road, telephone lines and distribution powerlines. Total length ~12km.

Route Alignment - Alternative 2

The two powerlines would exit the OCGT power plant on its northern side and follow the alignment of the existing two 132kV transmission lines that run between PetroSA and Proteus substation. The proposal is to erect the two new transmission lines parallel and to the west of the existing transmission lines. The alignment would traverse a number of farms and cultivated land. Total length ~10km.

Route Alignment - Alternative 3

This route alignment exits the OCGT power plant on its northern side and runs parallel and to the north of the railway line in a westerly direction for approximately 4km to Kleinberg. The powerline would then follow a route of about 10km running northwards adjacent to an existing 66kV overhead powerline along a valley and thus approaching Proteus substation from the south. This alignment follows an existing utility corridor (railway line), and traverses cultivated land as well as less disturbed valleys. Total length ~14km.

Proposed Tower Configurations

Alternatives in tower structures have also been identified. Depending on the terrain and route chosen, one or a combination of tower designs might be used. Four different tower structure designs are being considered for the project. These are:

- Compact cross rope suspension towers;
- Cross rope suspension towers;
- Self supporting bend or strain towers; and
- Self supporting towers.

Road Access to OCGT Power Plant

It is proposed to provide road access to the OCGT power plant off the N2 National Road. There is an existing access road to the landfill site (west of PetroSA), from which point a new access road could be constructed.

From the landfill site to the OCGT power plant site, two alternative access routes have been identified. Both routes would run along the western boundary of PetroSA and would either continue along the alignment of the existing 132kV overhead transmission lines or along the railway line (see Figure 4). The alternative routes would allow for the alignment of the proposed fuel supply pipeline with the road access route, thereby optimising on a single utility corridor.

An additional alternative access road route was identified by the proponent during the Scoping Phase. This alternative route takes access from the N2 approximately 2,5km west of PetroSA's westernmost security access road (to the landfill site) and runs in a north-easterly direction along the western boundary of the PetroSA property (refer to Figure 4). The route is

approximately 2km long and will allow for dedicated access to the OCGT power plant without having to intrude on PetroSA's property.

Road Access to Proposed Transmission Line Routes

Access would also be required to reach the various transmission line tower sites, in order to erect the structures. The access route would be used for maintenance purposes during the operational phase of the transmission line as well.

Water Supply

De-mineralised water would be required if proposed NO_x abatement measures are adopted that require the introduction of such water into the combustion process. Options for acquiring de-mineralised water include Eskom installing a water treatment plant to de-mineralise the water themselves, or to purchase de-mineralised water from PetroSA.

Water is also required for turbine blade washing in the OCGT power plant itself. Blade washing would occur approximately once every six months and would require approximately 1 000 litres of water per turbine per wash. Effluent from blade washing would need to be disposed of appropriately. Fire prevention will also require access to a water source.

Storage Tank Farm

The proposed development would include the installation of a number of storage tanks within the boundary of the OCGT power plant site. The number and volumes of tanks required would be informed by the present investigation and would depend on the amount and type of water required for the operation of the OCGT power plant. Storage tanks may be required for the following liquids:

- Kerosene
- Demineralised water
- Raw water
- Neutralised water
- Acid
- Caustic
- Waste water

PUBLIC PARTICIPATION

A comprehensive public consultation process has been launched, which will underpin the entire EIA process. During the Scoping Phase, this comprised initial stakeholder consultation, the wide distribution of a Background Information Document, media notices and a public forum.

In order to elicit comments on the draft of this report, an information sheet that provided a summary of the draft was distributed to registered I&APs. Registered I&APs were also invited to attend a second public forum in the form of a combined open house and public meeting where the report was presented.

Issues Identified

A number of environmental concerns were identified by I&APs, relevant authorities, as well as the project team. The issues identified to date are as follows:

- Botanical issues;

- Avifaunal issues;
- Atmospheric emissions;
- Water consumption;
- Effluent management issues;
- Geology and drainage;
- Traffic and access;
- Existing infrastructure;
- Visual impact;
- Noise;
- Heritage resources impacts;
- Socio-economic impacts (including employment opportunities);
- Impact of adjacent activities;
- Construction phase impacts; and
- Operational phase impacts.

CONCLUSION AND WAY FORWARD

This Final Scoping Report describes the background to the EIA for the OCGT power plant and associated infrastructure at Mossel Bay, as well as provides information on the process to be followed in carrying out the study, documents all the comments received and provides responses and, most importantly, identifies the significant impacts (issues) likely to result from the project. With this understanding of the likely impacts, the subsequent EIA Phase will be able to address the environmental consequences of the proposed project in a substantive manner.

In the next phase of the environmental assessment, the following specialist input is being considered:

- Botanical;
- Avifaunal;
- Heritage;
- Visual;
- Air pollution and risk;
- Noise pollution; and
- Socio-economic.

These studies will assist in informing the subsequent EIA Phase, along with essential contributions from the other disciplines represented on the consulting team.

This Scoping Report is being submitted to the decision-making authority for approval along with the submission of the Plan of Study for the Environmental Impact Report, i.e. the assessment phase.

1 BACKGROUND AND INTRODUCTION

1.1 BACKGROUND

This report serves as the documentation in support of the Scoping Phase of the Environmental Impact Assessment (EIA) process being carried out for a proposed Open Cycle Gas Turbine (OCGT) power plant, fuel supply pipeline, substation and transmission lines in the Mossel Bay area in the Western Cape.

The site of the proposed OCGT power plant is located approximately 13km west of the town of Mossel Bay and approximately 1km northwest of the PetroSA facility. A fuel supply pipeline is required between the PetroSA facility and the OCGT power plant. Two sets of overhead transmission lines are required between the OCGT power plant and the existing Proteus substation. The Proteus substation is located approximately 10km northwest of the proposed power plant.

Eskom is the primary supplier of electricity in South Africa, providing approximately 95% of the electricity used. An on-going challenge is meeting the increasing energy demands, whilst maintaining cost-effective electricity and minimising the impact on the environment.

The need to expand Eskom's electricity generation capacity in South Africa is to a large extent based on an on-going strategic planning exercise that is reflected in the following policy and planning documentation.

1.1.1 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 of the Republic of South Africa, published by the Department of Minerals and Energy 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 environmental² parameters. In

² Environmental parameters include economic and social aspects.

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.

1.1.2 Integrated Energy Plan – 2003

The Department of Minerals and Energy commissioned the IEP, which was undertaken by the Energy Research Institute of the University of Cape Town. The purpose of the IEP is 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. According to the IEP report, peaking capacity³ is of particular concern, as projections indicate that South Africa would be short of peaking capacity by approximately 2006.

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

In response to the White Paper's objective relating to affordable energy services, the National Electricity Regulator commissioned a NIRP. The objective of the NIRP is to determine the least-cost supply option to 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 energy intensity over the 20 year planning horizon;
- a reduction in electricity consumers who will switch 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.

³ Peaking capacity refers to the period in the morning and evening when demand for electricity is higher than at other times during the day.

1.1.4 Eskom Integrated Strategic Electricity Planning – 2003

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.

In the most recently approved ISEP plan (June 2003), the need for increased electricity supply by about 2006/7 was identified. This is to meet the gradual annual growth of approximately 3% in electricity demand, coupled with moderate generating reserves. Reinstating power stations that have been mothballed⁴ is an option identified as a priority in the ISEP, while various other options, ranging from plants using coal and nuclear fuels to renewable energy sources (mainly wind and solar projects), are being investigated.

Another technology identified for generating electricity in the short term is using Open Cycle Gas Turbines (OCGTs). This method is considered as effective and appropriate for providing a supply of electricity in the short term during peak demand periods. Peak demand periods refer to those times in the mornings and evenings when electricity demand is greatest. OCGT are a favoured means of meeting peak demand for two reasons. Firstly, they can be constructed within a relatively short space of time and secondly, once operational they can begin to generate electricity within 30 minutes of starting the power plant.

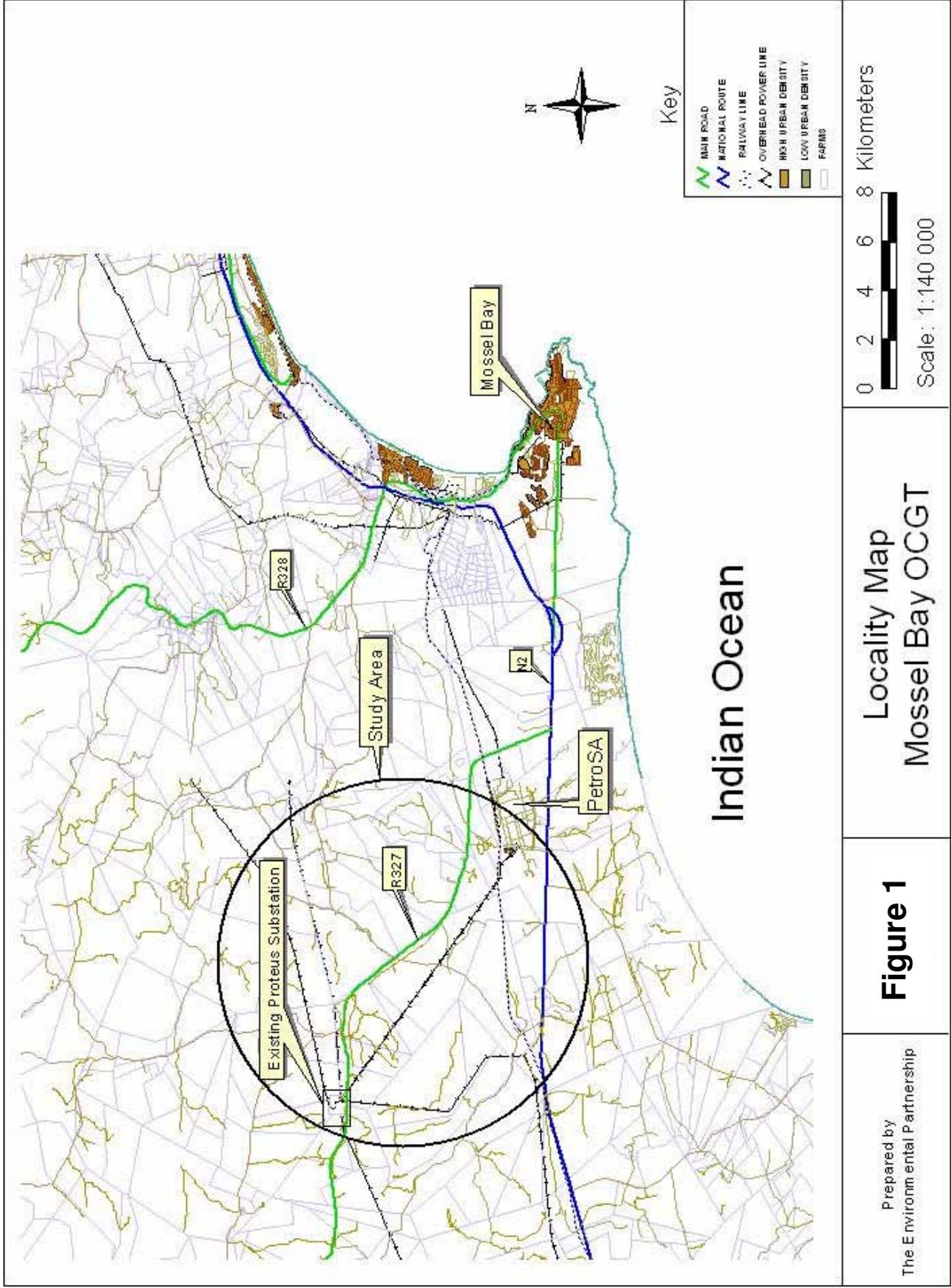
1.2 INTRODUCTION

As a consequence of the above-mentioned forward planning process, two OCGT power plants are proposed in the Western Cape, one in Atlantis near to Cape Town and the other adjacent to the PetroSA facility (previously known as Mossgas) near Mossel Bay. This environmental impact assessment is being undertaken for the activities relating to the proposed OCGT power plant, fuel supply pipeline, substation and transmission lines at Mossel Bay (see locality map, Figure 1). Note that an access road to the proposed power plant site is also needed.

An important consideration in the decision to use the OCGT method of generating electricity is that the power station could be commissioned over a short period of time. As the need for additional electricity capacity is imminent (2006/7), from a technical perspective, this technology would be appropriate. A screening study (Annexure 1) undertaken by Eskom discusses the selection of OCGT technology in greater detail. This screening study and the findings thereof provide the point of departure for this EIA process.

The Mossel Bay OCGT power 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 link in with the existing transmission national grid.

⁴ Deactivating the power station for an indefinite period.



Prepared by
The Environmental Partnership

Figure 1

**Locality Map
Mossel Bay OCGT**

The sequence of documents produced thus far for this EIA are the Department of Environmental Affairs and Development Planning (DEA&DP) Application Form and Scoping Checklist, providing the formal application for the project, a Plan of Study for Scoping which described the proposed scoping process, the Draft and Final versions of this Scoping Report and, included in the Final Scoping Report, a Plan of Study for the Environmental Impact Report (EIR). The Scoping Phase will be followed by the assessment *per se*, i.e. the EIR Phase, which will culminate in a comprehensive document. The EIA process and sequence of documents are illustrated in Figure 2 below.

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 which focus this assessment. They are as follows:

- a) Section 21 of the Environment Conservation Act [ECA] (No. 73 of 1989), per Government Notice R1182 of September 1997, as amended, contains a schedule of activities that may have a substantial detrimental effect on the environment and will require an EIA. The nature of the proposed development includes activities listed in this schedule. These activities are:

- 1(a) *“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)

- 1(c)(i) and (ii) *“The construction, erection and upgrading of: Infrastructure, ..., for the transportation of any such substance; and Manufacturing, storage, handling, treatment or processing facilities for any such substance”.*

Accordingly, the proposed OCGT power plant and associated infrastructure require authorisation from the competent environmental authority via the EIA process outlined in Regulation 1182.

The proposed project may entail various other actions that would also be considered as scheduled activities in terms of Regulation 1182, as amended. These include:

- 1(d) *“the construction, erection and upgrading of roads”*; and
- 2(c) and (e) *“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”.*

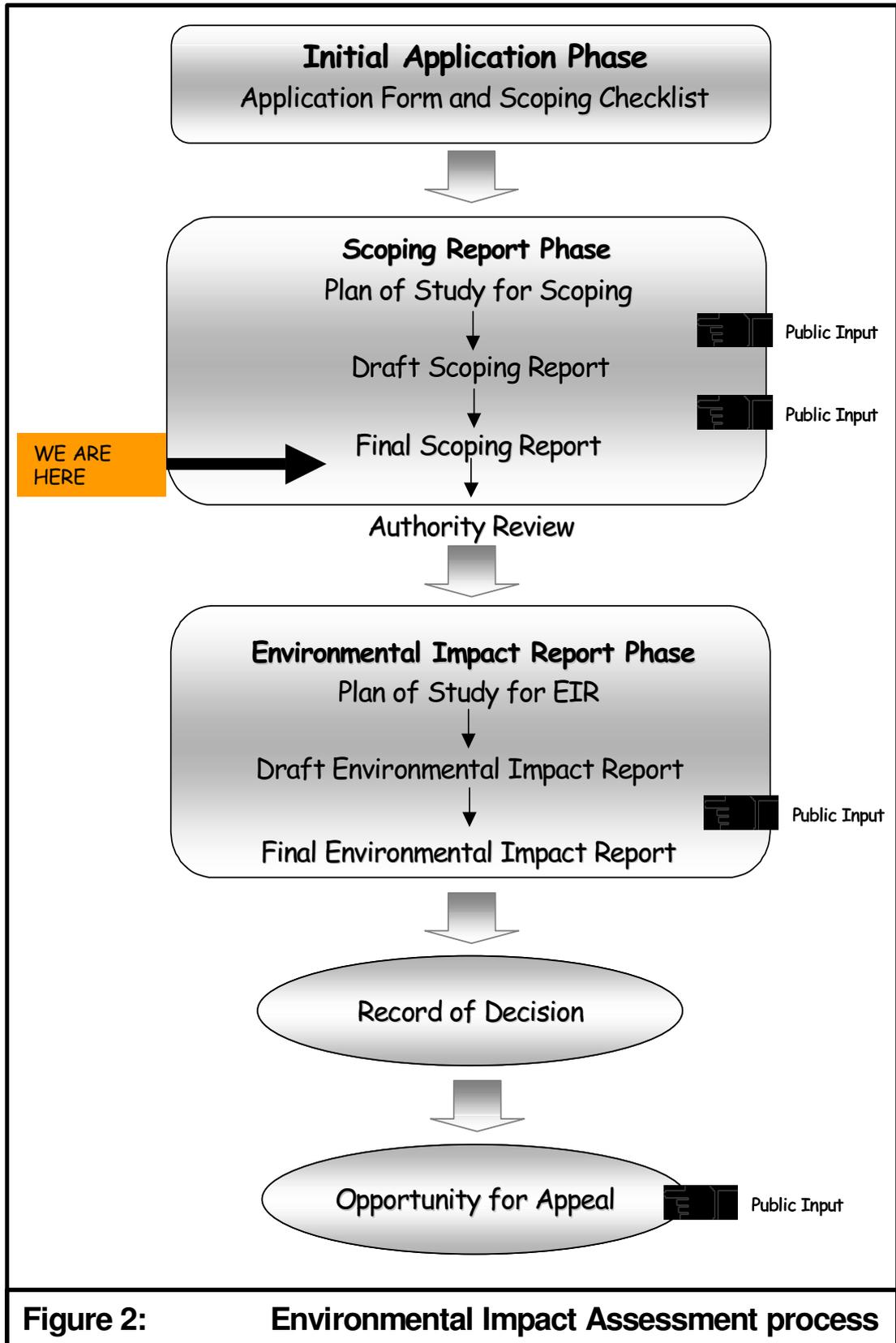


Figure 2: Environmental Impact Assessment process

This report describes the Scoping Phase of the EIA process and is to be submitted to the DEA&DP who apply the above Act⁵. While there are various approvals 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 Act.

- b) The Constitution of South Africa (No. 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development.
- c) The National Environmental Management Act (No. 107 of 1998) also 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 in the formulation of development proposals is a requirement of the IEM procedure, in terms of the identification of truly significant environmental impacts (scoping) by I&APs. The IEM procedure is designed to ensure that the environmental consequences of development proposals are understood and adequately considered during the conceptual design process, allowing negative aspects to be resolved or mitigated and positive aspects to be enhanced. It is thus a code of practice for ensuring that environmental considerations are fully integrated into all stages of development, by providing a procedural and regulatory mechanism for EIAs.

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

- The National Heritage Resources Act (No. 25 of 1999): The requirements of the National Heritage Resources Act will be addressed as an element of this study. The South African Heritage Resources Agency will be provided with all relevant documentation, since they have a statutory role to play in the decision-making process.
- 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 DEA&DP to consider during their decision-making process.
- 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 DEA&DP to consider during their decision-making process.
- The Air Pollution Prevention Act (No. 45 of 1965): As the proposed activities would entail emissions to the atmosphere, a permit application would need to be submitted to the Chief Air Pollution Control Officer by Eskom.

⁵ Note that while the Department of Environmental Affairs and Tourism (DEAT) is the primary responsible authority at the national level, they have delegated authority to the provincial department, viz. DEA&DP.

1.4 PROJECT TEAM

Ninham Shand has been appointed to conduct the EIA. The professional team that has been assembled by Ninham Shand is as follows:

| | |
|--------------------------------|---|
| Ninham Shand (Lead Consultant) | EIA facilitation & co-ordinator Avifaunal specialist |
| The Environmental Partnership | EIA process and reporting |
| AirShed Planning Professionals | Air quality specialist |
| Jongens Keet Associates | Acoustic specialist |
| CNdV Africa | Visual impact specialist |
| Nick Helme Botanical Surveys | Botanical specialist |
| Archaeology Contracts Office | Heritage specialist |
| Mark Wood Consultants | EIA Review |

1.5 REPORT STRUCTURE

This report is structured as follows:

| | |
|---------------|---|
| Chapter One | <i>Provides the introduction, policy and legislative requirements and background to the study</i> |
| Chapter Two | <i>Provides the methodology for the study</i> |
| Chapter Three | <i>Describes the study area</i> |
| Chapter Four | <i>Describes the project components</i> |
| Chapter Five | <i>Describes the public participation process</i> |
| Chapter Six | <i>Discusses the scoped issues</i> |
| Chapter Seven | <i>Concludes the report and describes the way forward</i> |

2 THE BRIEF

2.1 TERMS OF REFERENCE

As the proponent of the proposed development, Eskom has appointed the independent consulting team 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 1.2 above. As per the legislated EIA process, the independent environmental team would undertake the following:

- participate in proposal formulation;
- scope all environmental aspects that might have an impact;
- undertake assessment and evaluation,
- undertake a review phase, and
- submit the EIA report to the authority for decision.

A public participation programme 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 5 of this report.

The actions described above are the standard procedures required by the ECA, specifically Sections 21, 22 and 26. An evaluation of the significance and magnitude of identified environmental impacts can result in additional attention being required in some cases, or in others being discounted through them not posing impacts that are significantly negative (see Chapter 6).

The purpose of this report is to identify the range of possible environmental impacts that may result from the proposed activities. These potential impacts will be assessed in detail during the subsequent EIR Phase.

2.2 STUDY APPROACH

To initiate the EIA process, pre-application meetings were held with DEA&DP and DEAT during which the environmental process to be followed was presented. Thereafter the DEA&DP Application Form and Scoping Checklist, as well as the Plan of Study for Scoping, were submitted. The submission of the Application Form and Scoping Checklist also served as the formal application for the project. Refer to Annexure 2 for the acceptance letter for the Plan of Study for Scoping from DEA&DP.

The scoping exercise then followed. This was aimed at determining which possible environmental impacts are truly significant and thus require particular attention. The Application

Form and Scoping Checklist mentioned above assisted in accurately identifying the environmental aspects that are likely to require attention.

The sequence of documents noted in Section 1.2 above is more clearly reflected in Figure 2.

2.3 ASSUMPTIONS

The selection of Mossel Bay as a location for the OCGT power plant, as well as the selection of the proposed site adjacent to PetroSA, do not form part of this EIA process. A comprehensive internal screening study was undertaken by Eskom, which investigated potential sites for the proposed OCGT power plants, i.e. both at Atlantis and Mossel Bay (refer to the Environmental Screening for Siting Open Cycle Turbines in the Western Cape in Annexure 1). The screening study also resulted in the site for the OCGT power plant at Mossel Bay being identified in the position reflected in the present EIA. The ratification of Eskom's screening study by the environmental team has been accepted by the environmental authorities as the point of departure in this EIA, since it provides the necessary strategic level context.

Alternative methods of generating electricity are identified in the IEP, NIRP and ISEP planning processes and do not form part of this EIA. The Eskom screening study mentioned above provides the rationale for the adoption of OCGT technology in this particular case.

While there is a requirement 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. Consequently, without the proposed project, electricity shortfalls in South Africa can be expected by 2007. From a strategic, social and economic perspective this is considered to be unacceptable. 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.

3 THE AFFECTED ENVIRONMENT

3.1 GENERAL DESCRIPTION OF THE AREA

The broader area is of a rural nature, with PetroSA providing an industrial node within a largely agricultural landscape. The terrain within the study area is characterised by a combination of relatively flat areas and undulating valleys. The predominant farming activity in the study area is the cultivation of wheat as well as farming with cattle and sheep.

The proposed OCGT power plant site lies 13km west of Mossel Bay⁶, adjacent to the western boundary of the PetroSA facility. The Proteus substation is located approximately 10km northwest of the proposed power plant (see Figure 1).

3.2 GENERAL DESCRIPTION OF STUDY SITE

The proposed OCGT power plant and transmission substation site (see Figure 3) is located 1km northwest of the PetroSA facility, with its associated water purification plant, bulk storage facilities and waste landfill site. The N2 National Road is located approximately 1,5km south of the proposed site, with the R327 located approximately 3km north of the OCGT site. The Kleinberg-Mossdustria railway line lies immediately north of the plant.

PetroSA owns the proposed OCGT power plant and substation site and it is currently being leased as grazing pasture to the adjacent farmer. The site is disturbed by the existing grazing activities. The proposed fuel pipeline and access road routes also traverse fairly disturbed land owned by PetroSA.

The proposed alternative routes for the transmission lines traverse a number of farms and are routed between the proposed OCGT power plant and the existing Proteus substation (see Figure 4). The proposed alternative route alignments traverse, to a greater or lesser degree, a number of relatively undisturbed valleys, particularly within the vicinity of the Proteus substation.

3.3 FLORA

Mossel Bay is located within the Cape Floral Kingdom, which is considered the smallest yet most diverse plant kingdom in the world. The Cape Floral Kingdom lies in the South Western Cape and stretches from Van Rhynsdorp to Port Elizabeth. Of the 8600 plant types which are present in the Cape Floral Kingdom, approximately 65% are endemic to the area. There are five types of vegetation in the Cape Floral Kingdom, namely Fynbos, Renosterveld, Thicket, Succulent Karoo and Afrotane Forest. All five vegetation types are found within the greater Mossel bay area (<http://www.gardenroute.net/mby/mbfynrout.htm>).

⁶ Characterised by a moderately sized fishing harbour and oil industry activities.

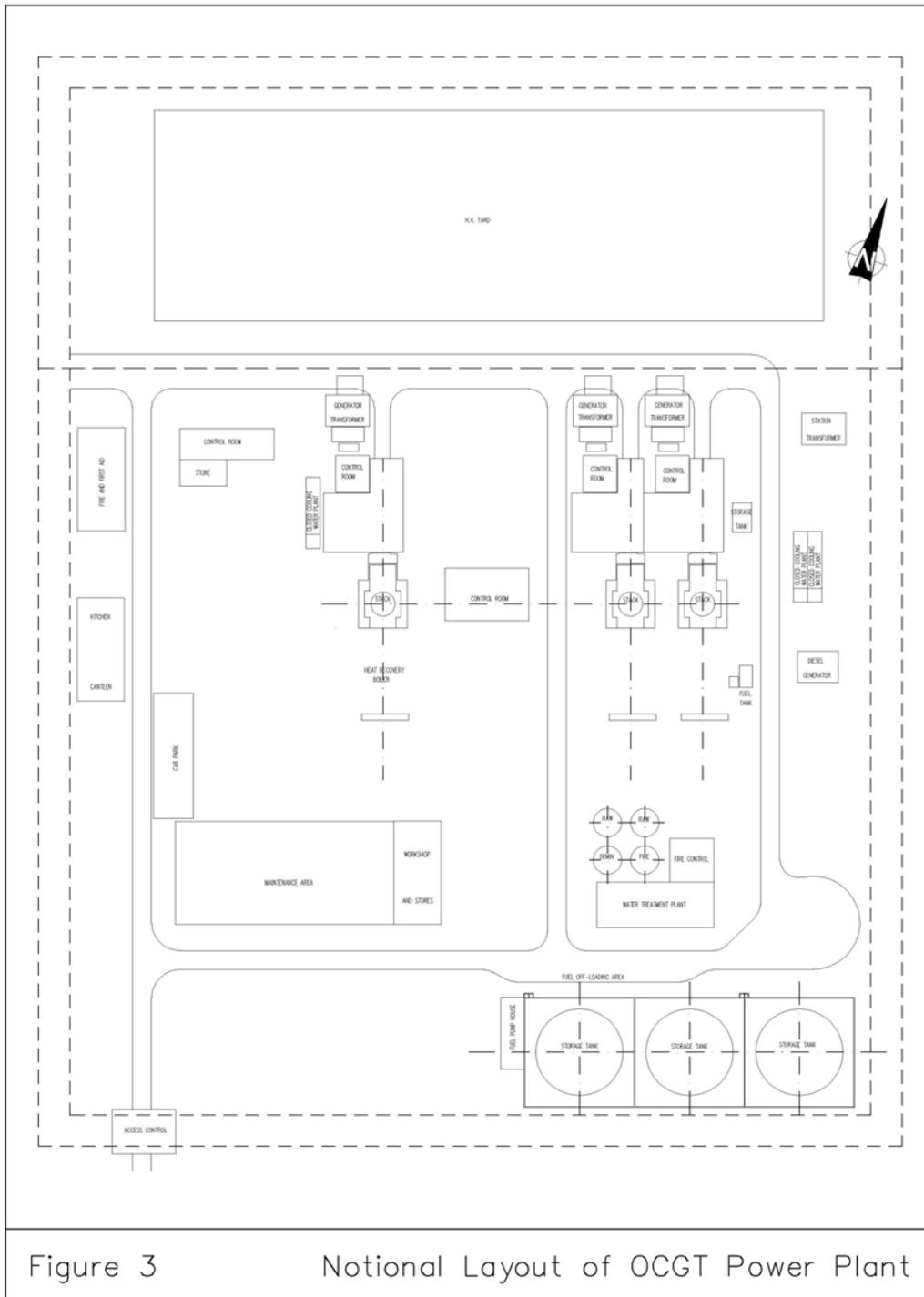
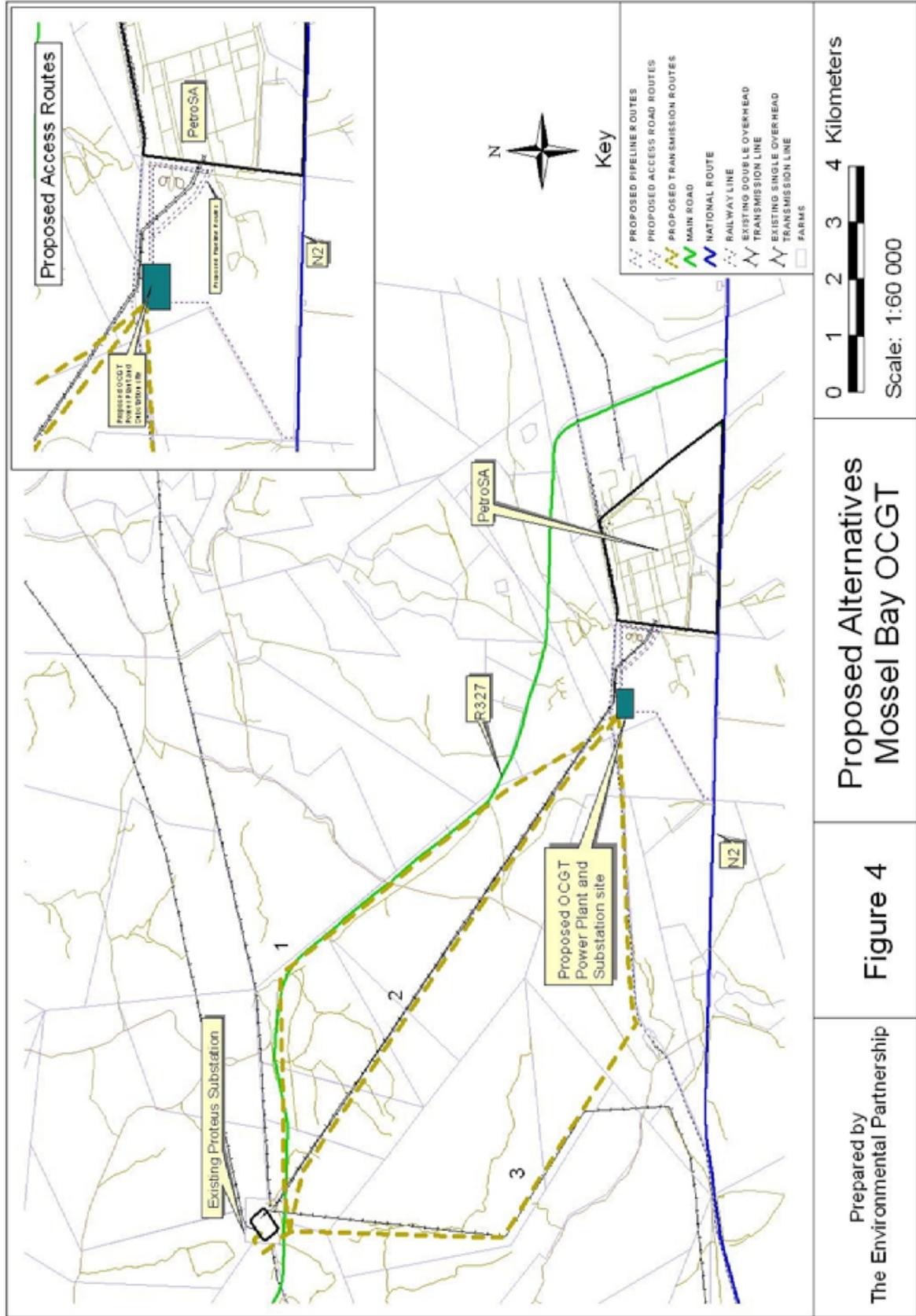


Figure 3 Notional Layout of OCGT Power Plant

Note that the extent of the High Voltage (HV) yard, i.e. substation, indicated above will be considerably larger, due to a revision in the planning as described in Section 4.2.1 below.



Proposed Alternatives
Mossel Bay OCGT

Figure 4

Prepared by
The Environmental Partnership

Vegetation within the study area can be classified as Renosterveld and a category of mosaic Thicket. The vegetation associated with the Thicket Biome is evergreen, succulent trees, shrubs and vines. The Renosterveld falls within the Fynbos Biome and is localised in distribution. Renosterveld is characterised by a herb layer on the ground surface in which grasses dominate and deciduous geophytes and annuals are seasonally prominent. It is intended to commission a specialist botanical study to provide more detail relevant to the botanical implications of the proposed project (see Section 6.1).

3.4 AVIFAUNA

The greater Mossel Bay area is characterised by diverse bird life. The shoreline, which is subject to tidal action, sustains a variety of Waders, Terns, Gulls, Oystercatchers and Gannets. The waders are mostly migratory birds, breeding in the northern hemisphere and spending the summer in the southern hemisphere. Larger flocks of different species invade the Mossel Bay shoreline from September until April.

In addition, the Mossel Bay Fynbos area is associated with the sugarbird, of which there are only two species in Southern Africa. The area is also associated with the sunbirds and the orange breasted sunbird is endemic to the Cape Floral Kingdom.

The surrounding farmlands are associated with a number of raptors like eagles and buzzards, species of larks, the capped wheatear, the white stork as well as the blue crane. Most of the birds are endemic to the area and will breed in this vicinity (<http://www.gardenroute.net/mby/mbbirds.htm>). It is intended to commission a specialist avifaunal study to provide more detail relevant to the avifaunal implications of the proposed project (see Section 6.2).

3.5 FAUNA

Due to the farming activities within the study area, terrestrial fauna diversity is restricted. However, there is evidence of various small mammals such as rodents, porcupines, grysbok, and other small antelope within the study area. In addition, PetroSA's Nature Reserve is located adjacent to the refinery, between the southern security fence and the N2 National Road. Species found with the Nature Reserve include springbok, Burchell's zebra, grysbok and Cape hares.

3.6 GEOLOGY AND DRAINAGE

The study area is underlain by sandstone and shale beds of the Table Mountain and Bokkeveld Groups. North of Mossel Bay, rocks of the Enon Formation and other similar younger deposits (of Cretaceous and Tertiary age) are found. These rocks are deposited in an east to west elongated trough and are considered to extend offshore.

The Kouga Formation is the principal aquifer in the study area and its recharge area lies north of the refinery.

A minor seasonal tributary of the Blinde River, which drains to the south, has its source approximately 1km to the south-south-west of the proposed OCGT power plant site. However, the site is particularly flat and as a consequence is not well drained. A shallow water table is likely to occur in the eastern part of the proposed site.

3.7 CLIMATE

The study area falls within a Mediterranean-type climate with hot summers and wet winters. The annual precipitation is approximately 400-600mm, peaking in spring and autumn. Winds are typically from the south-east during summer months, while winter frontal systems cause north and westerly winds. Strong winds with an average speed of 20km/h are experienced during winter, whilst the average wind speed in summer is approximately 15km/h (PetroSA, undated).

The average mean temperature in summer is approximately 25⁰C and the average mean temperature in winter is approximately 14⁰C.

3.8 EXISTING INFRASTRUCTURE

The N2 National Road is located approximately 1.5km south of the proposed OCGT power plant and substation site, whilst the R327 is located to the north of the proposed site. The Kleinberg-Mossdustria railway line is located immediately north of the site. The Proteus substation is located 10km northwest of the proposed power plant site and two 132kV transmission lines run in a north-westerly direction between the PetroSA facility and the Proteus substation.

3.9 CULTURAL RESOURCES

The study area has no known sites of archaeological importance. However, stone age tools have been reported from the waste disposal site located adjacent to the PetroSA facility.

Although somewhat removed from the study site, the town of Mossel Bay is associated with a number of culturally significant sites and buildings, including Cape St. Blaize Cave, the replica of the stone Padrao that Da Gama erected and the Munrohoek cottages. It is intended to commission a specialist heritage study to provide more detail relevant to the heritage implications of the proposed project (see Section 6.10).

3.10 PLANNING FRAMEWORK

The proposed OCGT power plant and transmission substation site is located within PetroSA's landholding and is thus zoned for industrial use, although it is presently used for agricultural

activities (pasturage and crops). The alternative alignments for the proposed transmission lines would traverse land zoned for agriculture.

A discrepancy in the delineation of the urban edge in the Mossel Bay Growth Management Framework should be noted, where it is indicated as running along the western security fence rather than along the extreme western boundary of PetroSA's landholding. The landfill site, evaporation ponds and construction village are all outside of the security fence. However, according to the Chief Planner for the Mossel Bay Municipality, this is incorrect as the urban edge should lie on the boundary of the PetroSA property. This discrepancy is in the process of being addressed. (Kruger, pers com).

4 PROJECT PROPOSAL

4.1 PROPOSED ACTIVITIES

The proposed project comprises the following components:

- The OCGT power plant (made up of three or four gas turbines with an output of 150 to 250 MW each) adjacent to the existing PetroSA facility.
- A fuel supply pipeline to transport kerosene from the PetroSA facility to the OCGT power plant;
- A substation adjacent to the OCGT power plant;
- Two 400kV transmission lines from the OCGT substation to Proteus substation.
- The upgrade of the Proteus substation within the boundaries of the substation; and
- An access route from the N2 National Road to the proposed OCGT power plant and substation site.

4.2 OPEN CYCLE GAS TURBINE POWER PLANT

The OCGT power plant would produce electricity by means of hot gas turning a turbine that powers a generator (see Figure 5). The OCGT power plant is based on the Brayton cycle which describes what happens to air as it passes through the system and specifies the relationship between volume of air in the system and the pressure it is under (Eskom: Resources and Strategy Research Division, 2004).

According to the Brayton cycle, air is initially compressed, increasing its pressure as the volume of space it occupies is reduced. This compressed air is then heated at a constant pressure. Heat is added by injecting fuel into the combustor and igniting it on a continuous basis. The hot compressed air is then allowed to expand reducing the pressure and temperature and increasing its volume. This expansion takes place within the turbine, where the expansion of the hot gasses against the turbine blades turns a shaft. This shaft extends into a generator, which produces electricity. The Brayton cycle is completed by a process where the volume of air is decreased (that is, the temperature decreases) as heat is absorbed into the atmosphere.

It is envisaged that the OCGT power plant would operate for an average of two hours each morning and evening. This, however, is dependent on electricity demand and system requirements. It could thus be necessary to operate for up to eight hours per at a time. The objective of the OCGT power plant is to provide peaking power within a relatively short time after starting the plant.

The operation of the gas turbine may result in airborne particles being deposited on the compressor blades. Because soiling of the compressor results in the reduction of the thermal efficiency of the gas, the compressor blades would require regular cleaning. The cleaning may occur while the plant is off-line or on-line. The cleaning is undertaken using a hydrocarbon

based solvent, which will be mixed with water to form an emulsion. Effluent produced by the off-line cleaning would be drained from the compressor using a controlled process which passes through an oil separator and thereafter would be pumped to the PetroSA waste disposal site.

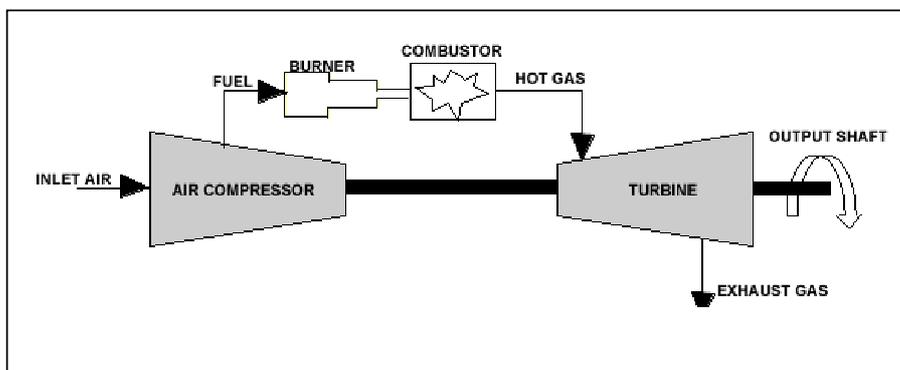


Figure 5: A typical gas turbine

4.2.1 OCGT Power Plant Extent and Layout

Alternatives in site layout will be formulated so as to ensure that the appropriate configuration is achieved from an environmental and technical perspective. This would be within the boundary of the site allowed for the OCGT power plant and adjacent substation. The OCGT power plant and transmission substation would occupy an area of approximately 370m by 630m in extent (~25ha). During the formulation of this project, the extent of the power plant and substation site was determined as approximately 9ha. However, due to a revision in the extent of the substation component, this area has been increased to approximately 25ha. The highest point of the plant would be the emissions stack, likely to be about 30m high but finality in this regard would depend on the outcome of a specialist air quality study.

The intention is to install three to four turbines with a maximum combined output of 1000MW. The proposed turbine size varies from 120 to 250MW, depending on the technology and supplier. As indicated previously, hot gas is produced by introducing fuel to compressed air in a combustion chamber. The fuel in this case would be a form of kerosene acquired from PetroSA.

4.2.2 Emission Control Measures Relating to the OCGT Power Plant

Although the OCGT power plant is considered a 'clean' technology in comparison to coal-burning power stations, it produces emissions such as oxides of sulphur, oxides of nitrogen (NO_x) and greenhouse gasses e.g. carbon dioxide. The exhaust gasses of the OCGT power plant would be discharged to the atmosphere through the stacks. It is our understanding that NO_x emissions are the important issue of concern related to air quality, as emission levels of oxides of sulphur and carbon would be well below DEAT guidelines. The impacts of all emissions would be addressed by means of the intended air quality specialist study (see Section 6.3).

In South Africa, NO_x emission levels are regulated by guidelines from DEAT. The amount of NO_x emitted from the proposed OCGT power plant would depend on which manufacturer Eskom

selects to provide the turbines. In all cases, the NO_x emissions would, as a minimum, meet DEAT guidelines. However, depending on the turbine manufacturer selected, abatement of NO_x emission levels may be required in order to meet DEAT guidelines. Two possible NO_x abatement measures are being investigated for possible implementation:

a) Dry NO_x Abatement Measures

Most gas turbine manufacturers offer low NO_x burners in their gas turbines. These burners limit the formation of thermal NO_x through lean and staged combustion of the fuel. When burning natural gas, these systems can achieve NO_x levels as low as 25ppm. These systems are called dry low NO_x systems because they do not require water for NO_x abatement.

b) Wet NO_x Abatement Measures

Wet abatement refers to the injection of water or steam into the combustor to quench the flame temperature and thereby limit the formation of thermal NO_x. While all major suppliers have dry low NO_x systems for natural gas fuels, they have had varying success with dry low NO_x systems for liquid fuels such as diesel or kerosene. Therefore wet NO_x abatement is usually specified for liquid fuels.

It is estimated that approximately 547 000 kilo litres⁷ of de-mineralised water per year would be required should wet NO_x abatement measures be implemented.

4.3 FUEL SUPPLY PIPELINE

PetroSA would supply the fuel for the proposed OCGT power plant via a pipeline of between 3 and 5km in length. Approximately 350 000 tons (437 500 kilo litres)⁶ of kerosene would be required per year in order to operate the power plant for approximately eight hours per week. The proposed pipeline would be installed above the ground for safety reasons. Two alternative routes have been identified. See Figure 4.

4.3.1 Fuel pipeline alignment - Alternative 1

This alternative entails the fuel pipeline exiting the PetroSA refinery on its western boundary. Thereafter, it would run along the existing 132kV transmission lines route, terminating at the OCGT power plant.

4.3.2 Fuel pipeline alignment - Alternative 2

This alternative entails the fuel pipeline exiting the PetroSA refinery at its north-western boundary corner. The pipeline would then run adjacent to the railway line and terminate at the OCGT power plant.

⁷ Based on maximum expected operating time; likely to be considerably less.

4.4 TRANSMISSION SUBSTATION

A proposed transmission substation is to occupy an area adjacent to the OCGT power plant, within the 25ha area. The purpose of the transmission substation is to feed the generated electricity to the transmission lines which then feed into the Proteus substation. The substation would consist of three 400kV transformers with their associated infrastructure and steelwork (see Figure 3).

4.5 TRANSMISSION LINES

In order to connect the proposed OCGT power plant to the existing transmission network, two 400kV transmission lines would be required between the power plant and the existing Proteus substation. The towers would be erected approximately 400m apart within a confined servitude width of 55m for each line. Two sets of transmission lines are required in order to secure a constant and reliable supply to the Proteus substation in the event of one of the lines requiring maintenance or experiencing faults.

4.5.1 Proposed Route Alignments

Three route alignments between the OCGT power plant site and the Proteus substation have been identified (see Figure 4). A description of each proposed alternative route follows. For all the alternatives, the two transmission lines would run parallel to each other within the minimum required combined servitude. In addition, for all alternatives, the transmission lines would pass south of the Proteus substation and then around to enter the substation at its north-western side, since the vacant space allocated for the purpose is located there (see Figure 4). The servitude rights will be acquired by Eskom and certain constraints would be imposed on the types of activities that could be permitted within the servitude.

a) Route Alignment - Alternative 1

The two transmission lines would exit the OCGT power plant on its north-western side, cross over the railway line, run in a north-north-westerly direction for approximately 2km along a farm boundary, towards the R327. Thereafter the proposed route runs adjacent to the R327 for the remaining 10km to Proteus substation. This alternative crosses farmland before forming part of an existing utility corridor comprising a road, telephone lines and distribution lines. The total length would be approximately 12km.

b) Route Alignment - Alternative 2

The two transmission lines would exit the OCGT power plant on its north-western side and follow the alignment of the existing two 132kV transmission lines that run between PetroSA and Proteus substation. The proposal is to erect the two new transmission lines parallel and to the

west of the existing transmission lines. The alignment would traverse a number of farms, a secondary road and cultivated land. The total length would be approximately 10km.

c) **Route Alignment - Alternative 3**

This route alignment exits the OCGT power plant on its western side and runs parallel and to the north of the railway line in a westerly direction for approximately 4km to Kleinberg. The transmission lines would cross over an existing secondary road to run parallel to an existing 66 kV distribution line. The transmission lines would then follow a route of about 10km running northwards along a valley to the Proteus substation. This alignment follows an existing utility corridor (railway line), and traverses cultivated land as well as less disturbed valleys. The total length would be approximately 14km.

4.5.2 **Proposed Tower Configurations**

Alternatives in tower structures have also been identified. Tower structures that are being considered for the project are:

- Compact cross rope suspension towers;
- Cross rope suspension towers;
- Self supporting bend or strain towers; and
- Self supporting towers.

To a large degree, the choice of tower design would depend on the terrain and route alignment. A combination of the following tower designs would be used:

a) **Compact cross rope suspension towers**

The compact cross rope suspension tower (including stays wires) is approximately 49m wide and 38m high (see Figure 6). The conductors are suspended in a triangular configuration and the tower resembles a V-type structure with the top width being 19m wide.

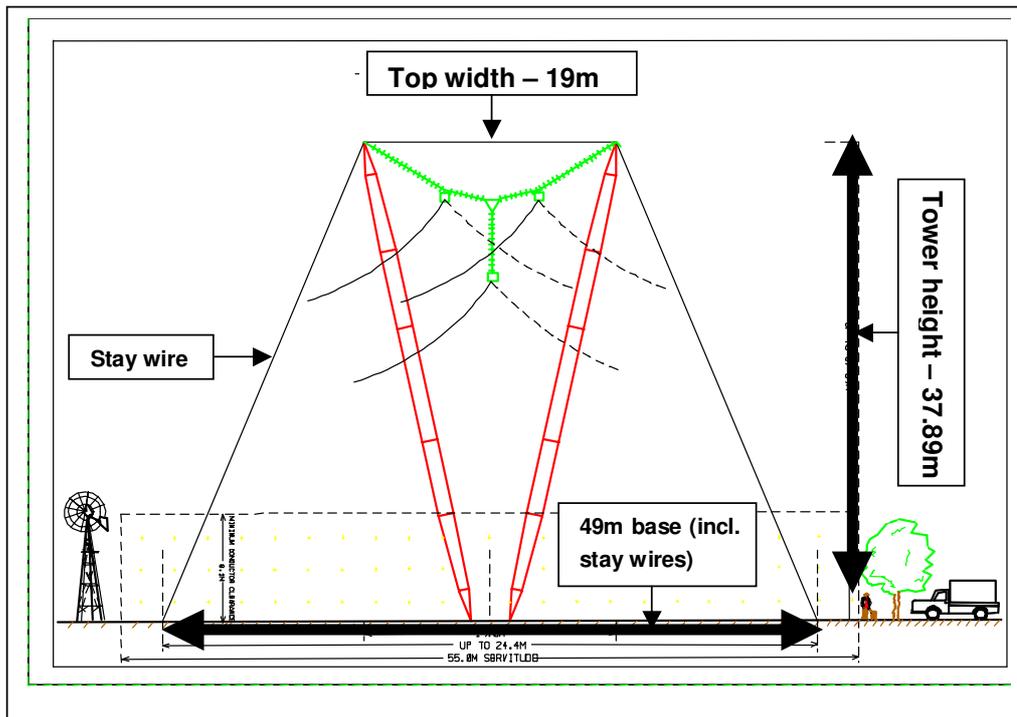


Figure 6: Diagrammatic representation of the compact cross-rope suspension tower configuration

b) Cross rope suspension tower

A larger version of the compact cross-rope tower, these structures are characterised by two steel vertical legs and a cross-rope forming the horizontal arm from which the conductors are suspended. Stay wires are used to securely anchor the structure (see Figure 7). The tower configuration is approximately 38m high and 21m wide (excluding the anchors). The distance between the anchors at the base of the structure can be up to 80m.

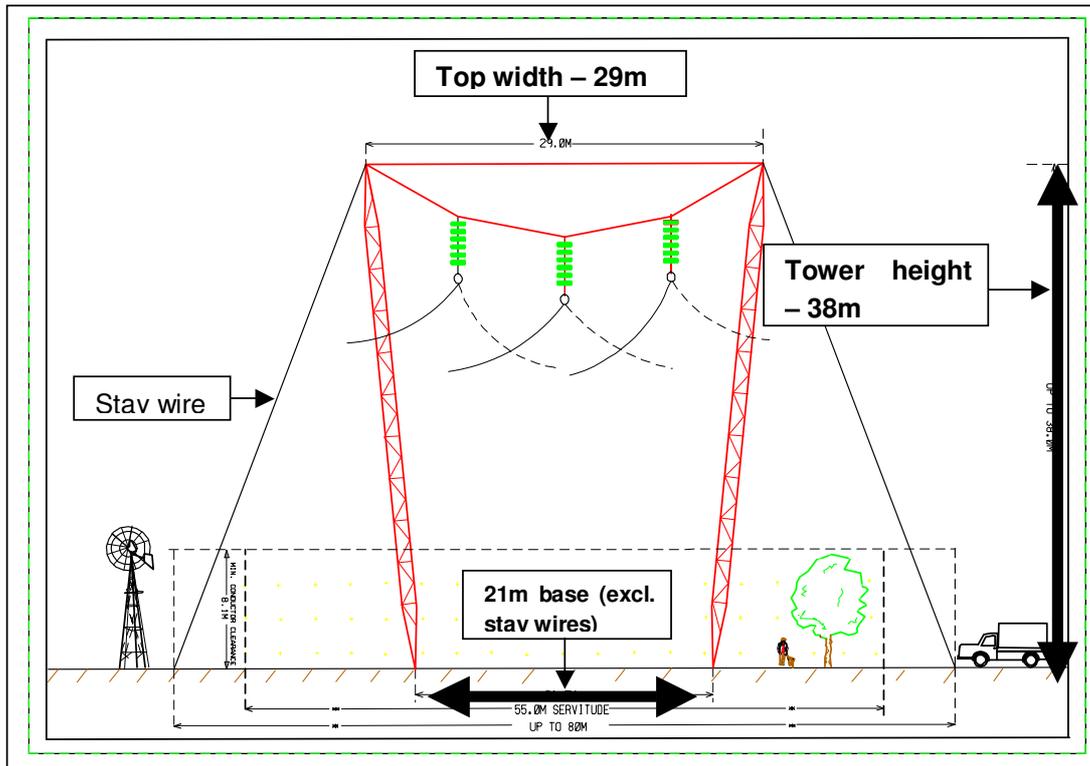


Figure 7: Diagrammatic representation of the cross-rope suspension tower Configuration

c) Self supporting bend or strain towers

These suspension towers consist of a number of steel components that are joined together to form a steel-intensive structure. The tower is approximately 30m high and 22.5m wide (see Figure 8). These types of structures are typically used at bend point on a transmission line alignment.

d) Self supporting tower

The self-supporting towers consist of a number of steel components that are joined together to form a steel-intensive structure (see Figure 9). The tower is approximately 30m high and 20m wide at the apex. The base of the tower is approximately 8.8m wide.

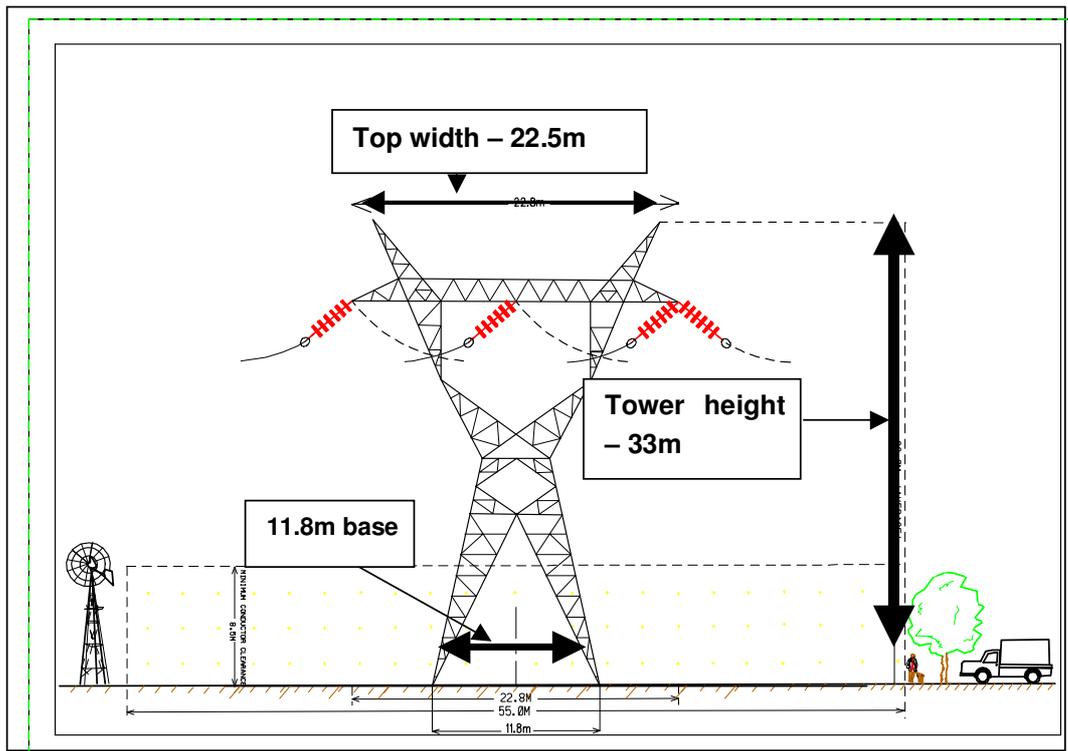


Figure 8: Diagrammatic representation of the self supporting strain tower configuration

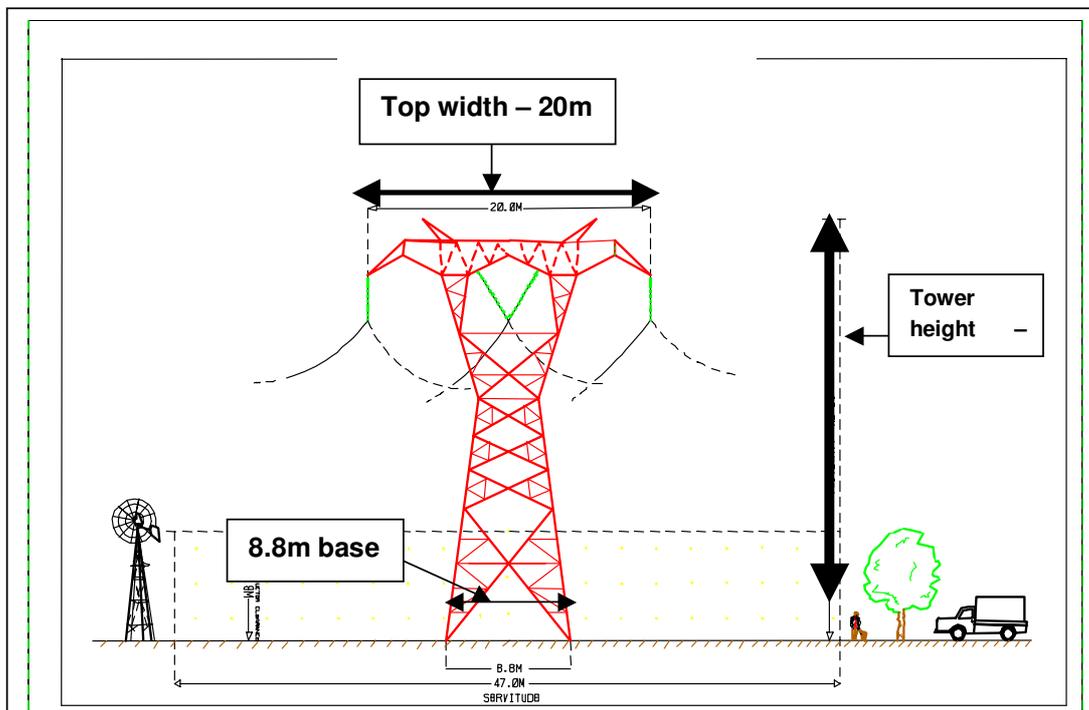


Figure 9: Diagrammatic representation of the self supporting tower configuration

4.6 ACCESS

4.6.1 Road Access to OCGT Power Plant

It is proposed to provide road access to the OCGT power plant off the N2 National Road. There is an existing access road to the landfill site (west of PetroSA), from which point a new access road could be constructed.

From the landfill site to the OCGT power plant site, two alternative access routes have been identified. Both routes would run along the western boundary of PetroSA and would either continue along the alignment of the existing 132kV overhead transmission lines or along the railway line (see Figure 4). The alternative routes would allow for the alignment of the proposed fuel supply pipeline with the road access route, thereby optimising on a single utility corridor.

An additional alternative access road route was identified by the proponent during the Scoping Phase. This alternative route takes access from the N2 approximately 2,5km west of PetroSA's westernmost security access road (to the landfill site) and runs in a north-easterly direction along the western boundary of the PetroSA property (refer to Figure 4). The route is approximately 2km long and will allow for dedicated access to the OCGT power plant without having to intrude on PetroSA's property.

4.6.2 Road access to proposed transmission line routes

Access will also be required to reach the various transmission line towers in order to construct the overhead transmission lines. The access route would also be used for maintenance purposes during the operational phase of the transmission lines as well.

4.7 WATER SUPPLY

Water required for the operation of the OCGT power plant would be sourced from PetroSA who obtain their supply from the Wolwedans Dam inland from Hartenbos. Water supply and demand is a key issue in the greater Mossel Bay area. The implications of increased demand on this source by various users is an important factor in this study.

If the wet NO_x abatement measures, as discussed in Section 4.2.2, were to be implemented, approximately 547 000 kilo litres of water (which equates to 1½ parts water to 1 part fuel) would be required per year.

Options for acquiring de-mineralised water include Eskom building a water treatment plant and de-mineralising the water themselves or to purchase the de-mineralised water from PetroSA. Fifteen percent of the water that goes into the de-mineralisation process is also wasted as brine. This would be formally disposed of in the appropriate manner and the possibility of utilising the waste site adjacent to PetroSA will be pursued.

Water is also required for fire protection on site and for blade washing. Blade washing would occur approximately every six months and would require approximately 1 000 litres of water per

turbine per wash. Effluent from blade washing would be disposed of appropriately. Fire prevention would also require access to a water source.

4.8 STORAGE TANK FARM

The proposed development includes the installation of a number of storage tanks within the boundary of the OCGT power plant site. The number and volumes of tanks required would be informed by the present investigation and would depend on the amount and type of water required for the operation of the OCGT power plant. Storage tanks may be required for the following liquids:

- Kerosene;
- Demineralised water;
- Raw water;
- Neutralised water;
- Acid;
- Caustic; and
- Waste water.

5 PUBLIC PARTICIPATION

5.1 PUBLIC PARTICIPATION UNDERTAKEN PRIOR TO DRAFT SCOPING REPORT

Public participation forms an integral part of the EIA process and plays a crucial role in the scoping process. To ensure that all issues relevant to the project are identified, comprehensive public scoping took place during the scoping process, prior to the compilation of the Draft Scoping Report.

A variety of methods were used and are discussed below.

5.1.1 Media Notices

As part of the public participation process, media notices were used to inform the general public of the project and invite them to a public forum, which was held on 3 May 2005. These notices were published in national, regional and local newspapers (see Annexure 3). The notices also informed the public that a Background Information Document (BID) was available and contact details were provided. The notices were published in English and Afrikaans in the following newspapers:

| National Newspapers | Date |
|----------------------------|---------------|
| Rapport | 17 April 2005 |
| Sunday Times | 17 April 2005 |
| Region Newspapers | |
| Die Burger | 15 April 2005 |
| Cape Times | 15 April 2005 |
| Local Community Newspapers | |
| Mossel Bay Advertiser | 15 April 2005 |

5.1.2 Background Information Document

A BID (see Annexure 4) was compiled which briefly described the background to the project, the proposal in brief, the environmental impact assessment procedure, the initial array of scoped issues, the I&APs identified to date and included a commenting form with a self addressed envelope. An invitation to attend the public forum mentioned above was also included. This BID was made available on the Eskom website as well and was compiled in English and Afrikaans.

In addition, the BID was posted and faxed to the following key people and groups:

- Affected landowners

- Patryfontein
- Leeuwin
- Haelkraal
- Bartelsfontein
- Harterus
- Buffelskloof
- Zuurrug;
- PetroSA;
- Voelvlei Farmers Union;
- Ward Councillor;
- Municipal Planning Dept;
- Municipal Electrical Dept;
- Mossel Bay Environmental Partnership;
- WESSA, Southern Cape;
- Earthlife Africa;
- Cape Nature;
- Energy Research Centre;
- Telkom;
- Dept of Trade & Industry;
- Dept of Minerals & Energy;
- Civil Aviation Authority;
- Spoornet; and
- National Electricity Regulator.

5.1.3 Meeting with Stakeholders

Identified stakeholders such as the affected landowners and local authorities were contacted and consulted as part of the project initiation phase. This occurred on 24 February 2005.

5.1.4 Public Forums

A public forum, which comprised a Stakeholder Meeting (14h30 to 16h00), an Open House (16h00 to 19h00) and a Public Meeting (19h00 to 20h30), was held on 3 May 2005. This interaction with the public took place at the Mossel Bay Library Hall in Mossel Bay. The 'Open House' method encourages discussion on a one to one basis between a member of the public and the relevant team member, depending on the concern they may have, whilst the public meetings allowed individuals to attend a formal meeting within a stipulated timeframe and listen to a formal presentation. The information presented at the Stakeholder and Public Meetings was also presented in the form of posters during the during Open House. Information relating to the project proposal in terms of the description, motivation and proposed environmental process were displayed and presented at each of the public engagement opportunities.

Members of the project team were available for the duration of the public forum to answer questions and discuss the available information. Comment forms were made available so that any issues identified could be recorded and addressed. Eight people attended the public forum

and 12 written submissions in total were received (see Annexure 5). Copies of the attendance register for the public forum are presented in Annexure 6. An Issues Trail tabulating the comments received, and responses thereto, is included in Annexure 7. Annexure 8 lists all the I&APs registered during this Scoping Phase of the EIA process.

5.2 PUBLIC PARTICIPATION UNDERTAKEN TO ELICIT COMMENT ON THE DRAFT SCOPING REPORT

The public participation process undertaken to elicit public comment on the Draft Scoping Report is outlined in the approved Plan of Study for Scoping (see Annexure 2) and is described below:

- The Draft Scoping Report was lodged at the Mossel Bay and D'Almeida Public Libraries and made available on the Eskom website as of 6 June 2005. A 21 day commenting period was provided, which terminated on 23 June 2005.
- All registered I&APs were informed of the availability of the draft report for review and were notified of a public forum by means of a letter dated 3 June 2005. This letter (see Annexure 9) included the executive summary of the Draft Scoping Report.
- A media notice published on 3 June 2005 stated that the Draft Scoping Report was available for comment and included an invitation to the public forum. This notice was placed in the Mossel Bay Advertiser in English and Afrikaans (Annexure 3).
- The second public forum, which comprised of formal presentations and an Open House was held at the Mossel Bay Library Hall in Mossel Bay. This occurred between 15h00 and 20h00 on 13 June 2005 and the findings of the Draft Scoping Report were presented there. An opportunity to raise any queries and concerns was provided. Seventeen I&APs attended the public forum and the attendance list is provided as Annexure 6.
- A presentation was given during a meeting of the Voëlvlei Landbouvereniging on 23 June 2005, where the findings of the Draft Scoping Report were presented.

The Issues Trail that appears as Annexure 7 includes the comments and queries received during the commenting period for the Draft Scoping Report, together with the responses provided by the environmental team and proponent.

6 SCOPED ISSUES

As a result of the scoping process described in this report, the following issues had been identified and potential environmental impacts are noted and discussed.

6.1 BOTANICAL ISSUES

With reference to Section 3.3, the broader study area lies in the heart of the Cape Floral Kingdom and a number of endemic plant species are present within the Mossel Bay area and potentially within the study area. Possible impacts could be the destruction of botanical species of significance.

With reference to the transmission line, the fuel pipeline and access route alternatives presented in this report, the intention is to commission a botanical study that will examine and evaluate the proposed alternatives. Along with the evaluation, recommendations should be made with regard to the impact of each alternative on the botanically significant areas.

With reference to the OCGT power plant and transmission substation site it is recommended that the aforementioned botanical investigation assess and evaluate the botanical sensitivity of the proposed site. Where appropriate, recommendations or mitigation measures should be provided. This information will form part of the assessment phase of the EIA process. The draft Terms of Reference (ToR) for the botanical impact assessment is as follows:

Undertake site visits and compile a report which reflects the following⁸:

- Broad description of the ecological characteristics of the site and surrounds;
- Identification and description of biodiversity pattern at community and ecosystem level (main vegetation type, plant communities in vicinity and threatened/vulnerable ecosystems), species level (Red Data Book species) and in terms of significant landscape features (e.g. wetlands) and presence of alien species;
- General comment on whether biodiversity processes would be affected;
- Significance of potential impacts and recommendations to prevent or mitigate these;
- Ranking in terms of flora impact severity of the transmission line route alternatives in particular; and
- Indicating the salient elements of the report on a map to be provided by Ninham Shand.

⁸ 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.

6.2 AVIFAUNAL ISSUES

Various bird species are attracted to areas that are under cultivation as well as to the better vegetated valleys located south of the Proteus substation.

It is recommended that an avifaunal specialist be commissioned to determine whether the proposed alternative transmission line routes would pose particular risks to birds. In addition, bird habitat areas would need to be determined and mapped. The specialist will examine the proposed alternatives in the light of information acquired and determine the impact of the alternatives on avifauna. Where appropriate, recommendations or mitigation measures should be provided. This information will form part of the assessment phase of the EIA process. The draft ToR for the avifaunal impact is as follows:

- General description of the occurrence and status of birdlife in the study area;
- Description of avifaunal habitats likely to be affected;
- Identification of rare or endangered species occurring in the study area;
- Assessment of potential interactions between identified bird species per transmission line alternative and affected habitat; and
- Provide a report capturing the above and including recommendation to mitigate possible impacts on birdlife.

6.3 ATMOSPHERIC EMISSIONS

The proposed OCGT power plant will result in the release of gaseous and particulate emissions, viz. sulphur dioxide, NO_x and carbon dioxide. In addition, heat is emitted from the OCGT power plant via the hot exhaust gasses.

It is intended that the impact of the OCGT power plant on the ambient air quality and temperature be investigated and modelled and that appropriate recommendations or mitigation measures be provided.

In addition, the suitability and effectiveness of the proposed NO_x abatement alternatives need to be assessed in this investigation. This information will form part of the assessment phase of the EIA process. The draft ToR for the air quality impact assessment is as follows:

- The Establishment of the Baseline:
 - Description of the atmospheric dispersion potential of the area based on available meteorological data.
 - Characterisation of the existing status of air quality based on any available air quality monitoring data.
 - Provide an overview of legislative and regulatory requirements pertaining to atmospheric emissions and ambient air quality, including local and international air quality guidelines and standards.

- Predicted Impacts Arising from the Proposed Plant:
 - The compilation of a comprehensive emissions inventory including process and fugitive emissions. The impact assessment would consider, as a minimum, airborne particulates (inhalable and total suspended particles), oxides of nitrogen, carbon monoxide, sulphur dioxide, unburnt organic compounds, carbon dioxide (greenhouse gas) and any odorous compounds. Where possible, engineering estimates would be used (based on similar installations). Alternatively, international emission factors would be employed which are based on gas (distillate) firing rates. Fugitive emissions include both gaseous (diffuse sources) and particulate compounds. Although only expected to be significant during the construction phase, fugitive dust emission sources include vehicle-entrained dust, earthworks, stockpiles, material transfer and general exposed areas.
 - Preparation of meteorological parameters suitable for the theoretical construction of a wind field and atmospheric dispersion. Hourly average wind speed, wind direction and ambient air temperatures for five years would be prepared for this purpose.
 - Atmospheric dispersion modelling of estimated emissions to determine resultant highest hourly, highest daily and annual average air pollutant concentrations in the vicinity of the proposed plant. The impact would be based on ground level predictions, including both air concentrations and deposition. Gas deposition would include both wet (fog) and dry. The following scenarios would be included:
 - Construction emissions;
 - Routine and upset emissions during normal operation;
 - Emissions during shutdowns; and
 - Effects of mitigation measures e.g. optimum stack height and other engineering options.
 - Impact assessment (incremental and cumulative) of the predicted air concentrations including:
 - Compliance checks with local ambient air requirements, including local authorities, DEAT and South African Standards.
 - Health risk assessment using internationally peer-reviewed risk criteria (typically, the World Health Organisation, US Environmental Protection Agency [IRIS], Agency for Toxic Substances and Disease Registry [ATSDR] and Health Canada).
 - Emission compliance check with local and international requirements (e.g. World Bank).

- Impact Assessment Rating in terms of Magnitude, Significance, Frequency of Occurrence, Duration and Probability.
- Preparation of emission and ambient air monitoring programme.
- Compilation of a comprehensive report in which the methodological approach and assumptions and uncertainties used are documented and the findings of the study presented.

Key deliverables from this specialist study would include recommendations regarding mitigation measures to reduce/ control emissions, as input into the technical design process, and guidance with respect to the development of an air monitoring protocol for inclusion in the EMP. The following general procedure would be used to develop the EMP:

- Focus on Sources and Pollutants identified as significant in the EIA.
- Using emission limits and air quality guidelines, criteria and targets contained in the EIA, develop Key Performance Indicators for both air quality and emissions.
- All mitigation measures and good housekeeping measures to be associated with each source and pollutant.
- Develop a pro-forma monitoring programme, including procedures, responsibilities and reporting formats (both internal and external).
- Incorporate preliminary cost estimates

6.4 WATER CONSUMPTION

As indicated in Section 4.7, de-mineralised water would be required, should wet NO_x abatement measures be implemented. In addition, approximately 1 000 litres of water would be required for blade washing, domestic use and fire protection on site.

As the Western Cape currently has water restrictions due to prolonged drought, the quantity of water required for the proposed development could potentially impact on the available water resources. It is recommended that the potential to source water, and the volumes of water required, be investigated and confirmed. In addition, it is recommended that water reduction and reuse measures be investigated and implemented.

6.5 EFFLUENT MANAGEMENT ISSUES

As indicated previously in Section 4.7, 15% of the water that is required for the de-mineralisation process is wasted as brine. In addition, the blade cleaning process would result in effluent discharge containing cleaning solvent. Brine and other discharge would be disposed of in an appropriate manner, possibly at the waste site adjacent to PetroSA.

The recommendation is to determine whether the waste site can accommodate the effluent which would be created as a result of the de-mineralisation, as well as accepting the waste

water from the blade cleaning process. The impact on the receiving environment needs to be determined.

6.6 GEOLOGY AND DRAINAGE

A geotechnical study has been commissioned by Eskom to address the founding conditions of the proposed OCGT power plant site. This information will be accessed during the compilation of the EIR. The findings of this study will have bearing on:

- founding conditions (capability of underlying geology to accommodate the foundations for the proposed structures);
- constructions phase impacts (e.g. exposed substrate and consequent erosion);
- the movement of surface or groundwater; and
- the quality of surface or groundwater.

6.7 TRAFFIC AND ACCESS

With the introduction of this development to the area, a possible impact would be the increased traffic to and from the power plant. However, because of the location of the site on the outskirts of the city, and a low level of vehicle traffic to the power plant once in operation, this should not be a major concern. Increased traffic during the construction phase will need to be considered.

The recommendation is that the additional alternative access route directly off the N2 National Road be subjected to a Traffic Impact Assessment (TIA), since any new intersection on a national road requires approval from the South African National Roads Agency Limited. The findings of the TIA would then be assessed together with the two alternative access routes from within the PetroSA site, to determine the impact on the affected environment, including existing infrastructure.

The access road required for the transmission line route needs to be investigated to ensure that the access does not cause an impact on the activities adjacent to the powerline servitude. This would also be particularly relevant during the construction phase of the project.

Where appropriate, the traffic implications of the proposed project will be determined and assessed, and recommendations or mitigation measures developed accordingly. This information will form part of the assessment phase of the EIA process and implications during construction will be addressed by means of the EMP (see Section 6.13).

6.8 EXISTING INFRASTRUCTURE

With reference to the proposed site for the OCGT power plant, substation, fuel supply pipeline and access road, the following infrastructure already in place will need to be considered:

- Railway line;

- PetroSA western security fence;
- Smaller farm fences;
- Existing 132kV transmission lines;
- Landfill site and associated roads;
- Construction camp and associated roads; and
- Arrangement of roads and structures within PetroSA facility, in terms of routing of fuel supply pipeline.

As far as the transmission lines route alternatives are concerned, the following existing infrastructure will need to be considered:

- Railway line;
- Farm fences;
- Kleinberg silos;
- Public roads, including the R327 and Patryfontein, Kleinberg, Rooikoppies and Vrede gravel roads;
- Farmsteads and related buildings, including Bartelsfontein, Patryfontein, Kleinberg, Vrede Rooikoppies and Rooidrif; and
- Transmission and distribution lines, including 132kV PetroSA-Proteus, 11/22kV lines along R327, 66kV woodpole line to Proteus from Albertinia, and the variety of 400kV and 132kV lines entering and leaving the Proteus substation.

6.9 VISUAL IMPACT

The OCGT power plant and transmission substation could potentially be visible from the N2 National Road and the proposed transmission lines from the R327 as well as the N2 National Road. The visual impact of the proposed development on the surrounding area will need to be determined. How the proposed OCGT power plant, transmission substation and transmission lines are either absorbed by, or inserted into, the other elements that comprise the landscape are important.

How the internal components of the OCGT power plant are arranged, in terms of the visual elements of line, form, colour and texture, are also a consideration. Landscape design and layout of the various components will need to ensure that the visual appearance is not overly intrusive. The issue of light pollution will also need to be addressed.

The intention is that a visual impact assessment (VIA) be undertaken in the assessment phase of this EIA. The VIA will need to take cognisance of the above comments and provide recommendations to ensure a reduced visual impact. The draft ToR for the visual impact assessment is as follows:

- Describe the existing visual characteristics of the site and its surroundings including any geology/landform features that influence them.
- Describe the visual significance of the area in terms of its history and present utilisation.

- Fully describe the proposed development.
- Determine the potential visual risks and opportunities presented by the proposed development.
- Determine the entire area from which the various elements of the proposed development will be visible (i.e. the viewshed.)
- Determine the important viewpoints from which the development will be visible and determine the nature of the visual impacts at these points.
- Prepare graphics that will aid the process of the assessment, (e.g. simulations of the development superimposed, to scale, on photographs taken from important viewpoints.)
- Assess the significance of the visual impact of the proposed development in terms of its scale, type, and character, including services and any ancillary structures pertaining to the development etc.
- Propose possible mitigation measures to minimise visual impact including changes to the design, alternative finishes and visual screening.
- Propose monitoring and review measures that will ensure long-term maintenance of visual standards.

6.10 NOISE

An OCGT power plant would generate noise, which emanates from the intake of air into the gas turbines, the generators, transformers, the pumps' pneumatic controls and the ventilation system. The gas turbine air intake facility would generate the most noise as it is not enclosed.

The recommendation is that a noise impact assessment be undertaken in the assessment phase of this EIA. The noise assessment will need to take cognisance of the above comments as well as the legal requirements associated with noise pollution control. Where appropriate, recommendations or mitigation measures should be provided. This information will form part of the assessment phase of the EIA process. The draft ToR for the noise impact assessment is as follows:

- Determination of the land use zoning and identification of all potential noise sensitive sites that could be impacted upon by activities relating to operation of the proposed OCGT power plants at Atlantis and Mossel Bay;
- Identification of all noise sources relating to the activities of the OCGT power plants during construction and operation, and that could potentially result in a noise impact at the identified noise sensitive sites;
- Determination of the sound emission, operating cycle and nature of the sound emission from each of the identified noise sources. Representative sound measurements are required to be recorded in the vicinity of the proposed sites during different times of day and night. It is estimated that at least two and possibly three days will be needed – assuming acceptable weather conditions. Weather conditions play a deciding factor in the measurement of sound at outdoor sites since sound measurements can only be conducted when wind speeds do not exceed 5m/sec;

- Calculation of the combined sound power level due to the sound emissions of the individual noise sources;
- Calculation of the expected rating level of sound at the identified noise sensitive sites from the combined sound power level emanating from identified noise sources;
- Determination of the existing ambient levels of noise at identified noise sensitive sites by conducting representative sound measurements;
- Determination of the acceptable rating level for noise at the identified noise sensitive sites;
- Calculation of the noise impact at identified noise sensitive sites;
- Assessment of the noise impact at identified noise sensitive sites in terms of SANS 10328; the South African Noise Control Regulations; the World Health Organisation; the World Bank and the Environmental Protection Agency, United States of America;
- Investigation of alternative noise mitigation procedures, if required, in collaboration with the design engineers of the OCGT plants and estimation of the impact of noise upon implementation of such procedures;
- Preparation and submission of a noise assessment report containing the procedures and findings of the investigation; and
- Preparation and submission of recommended noise mitigation procedures as part of a separate environmental noise management and monitoring plan.

6.11 HERITAGE RESOURCES IMPACT

The proposed development could have an impact on heritage resources⁹ within the study area. The proposed development would necessitate the excavation of foundations for the OCGT power plant and transmission substation, as well as for the foundations for the tower structures that make up the transmission lines.

It is intended that a heritage impact assessment be undertaken in order to determine whether the proposed OCGT power plant and transmission substation site as well as the proposed transmission lines route alignments impact on any heritage resources. Where appropriate, recommendations or mitigation measures should be provided. This information will form part of the assessment phase of the EIA process. The draft ToR for the heritage impact assessment is as follows:

- Attend a one-day site inspection.
- Review information and participate in the finalisation of the ToR.
- Undertake a heritage study that is reflected in a Heritage Statement.

The Heritage Statement will comprise the following:

⁹ Including archaeological resources.

- A problem statement, in terms of where, why and how heritage resources may be impacted on;
- A description of the affected environment;
- Expected impacts related to the site and route selection in general; and
- A ranking in terms of heritage impact severity of the transmission line route alternatives in particular.

6.12 SOCIO-ECONOMIC IMPACTS

The proposed project would have implications for the socio-economic conditions, both at a local and regional scale. It is therefore intended that a socio-economic specialist would comment on the proposed site location in terms of the potential economic impacts and its suitability in terms of identified economic criteria.

The input will also involve a baseline study, which will comprise of a comparative analysis of the different identified routes for the transmission lines.

As part of this task, the specialist will develop a checklist of possible economic criteria. Examples of such criteria include the following:

- Creation of job opportunities
- The sterilization of agricultural land
- The impact of tourism activities
- Potential loss in income
- Potential socio-economic impacts

The specialist will develop an economic score card, which will rate the different routes according to the economic criteria determined as part of this task. The findings from the economic score card will provide a preferred route along which to develop the transmission lines based on economic principals.

It should be noted that the proposed development will not provide significant employment opportunities, since indications are that only eight to 10 permanent jobs will be created.

A macro-economic impact study of the proposed project has been commissioned by Eskom and this information will be accessed during the compilation of the EIR.

6.13 CONSTRAINTS IMPOSED ON THE PROPOSED PROJECT BY EXISTING ACTIVITIES

The constraints imposed on the proposed OCGT power plant and transmission lines by existing or planned human activities will need to be determined. This will include the activities of PetroSA as well as the adjacent farms. Issues of possible concern would be the compatibility of

land uses, e.g. pivot irrigation in proximity to a transmission line, the ploughing, planting and harvesting of crops, the implications for livestock of tower support stays etc.

6.14 CONSTRUCTION PHASE IMPACTS

The construction of the proposed development could have negative impacts on the receiving environment. It is recommended that the general impacts of the construction phase be identified and evaluated and recommendations made for mitigation. It should be noted that a comprehensive Environmental Management Plan (EMP), to regulate and minimise the impacts of the construction phase, would be a condition of authorisation and this has been factored into the EIA process underway. This EMP would be implemented in entirety for the OCGT power plant construction phase. The transmission line construction will be addressed by means of an existing proceduralised approach that Eskom will apply.

6.15 OPERATIONAL PHASE IMPACTS

The operational phase of the proposed development could have a negative impact on the receiving environment. The impacts of the operational phase of the OCGT power plant need to be identified and evaluated, and recommendations made for mitigation. In this regard, a generic operational phase EMP will be compiled to address these impacts.

A risk assessment that addresses issues relating to, *inter alia*, the transport, storage and use of hazardous materials, would inform the operational phase EMP (see Section 6.3). Such an assessment is intended to identify potential areas of risk and the types of contingencies that may be considered. A risk assessment of major hazardous materials/ installations has been commissioned by Eskom and this information will be accessed during the compilation of the operational EMP.

7 CONCLUSION AND WAY FORWARD

This Final Scoping Report identified the environmental issues and concerns raised during the Scoping Phase of the project, in response to the proposed development alternatives formulated to date. The issues and concerns were raised by I&APs, authorities, the project team as well as from initial specialist input.

As a result of the scoping process undertaken thus far, the following specialist studies, (as discussed in Chapter 6) have been identified:

- Botanical impact assessment;
- Avifaunal impact assessment;
- Heritage impact assessment;
- Visual impact assessment;
- Air quality impact assessment;
- Noise impact assessment; and
- Socio-economic impact assessment.

These studies will assist in informing the EIR Phase, along with essential contributions from the other disciplines within the project team. Please refer to Annexure 10 for the Plan of Study for EIR (PoSEIR). The PoSEIR details how the EIR Phase will be undertaken and is being submitted to DEA&DP for approval.

This Final Scoping Report is being submitted to DEA&DP for their review and consideration.

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ANNEXURE 1: ESKOM SCREENING STUDY

**RESOURCES AND STRATEGY
RESEARCH DIVISION**

SCAN REPORT

INITIATED BY : Cathy Laing

ENVIRONMENTAL SCREENING FOR SITING OPEN
CYCLE GAS TURBINES IN THE WESTERN CAPE –
MOSSEL BAY

REPORT NO : NON/SC/04/24933
PROJECT NO : PRJ04-00591300-2616
BY : Indran Govender
ORGANISATION : Technology Services International

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SCAN REPORT

ENVIRONMENTAL SCREENING FOR SITING OPEN CYCLE GAS TURBINES IN THE WESTERN CAPE – MOSSEL BAY

REPORT NO: NON/SC/04/24933b

DATE: 28 MAY 2005

PROJECT LEADER: INDRAN GOVENDER

ACCEPTED BY: MICHAEL D MICHAEL

APPROVED BY: KERSERI PATHER

AUTHORISED BY: CATHY LAING

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EXECUTIVE SUMMARY

ENVIRONMENTAL SCREENING FOR SITING OPEN CYCLE GAS TURBINES IN THE WESTERN CAPE – MOSSEL BAY

INTRODUCTION

Need for Eskom's Expansion

South Africa's surplus electricity supply is expected to be exhausted by 2007. In order to meet growing electricity demands, South Africa will need to develop additional power generating capacity while at the same time ensuring energy efficiency programmes are implemented to reduce and shift demand.

Integrated Strategic Electricity Planning (ISEP) in Eskom

Eskom's Integrated Strategic Electricity Planning (ISEP) process provides strategic projections of supply-side and demand-side options to be implemented to meet long-term load forecasts.

The most attractive supply-side option is the return to service of the mothballed plant referred to as the Simunye Power Stations, which were placed in reserve storage during the period of high excess capacity on the Eskom system. Eskom has investigated a variety of options, including conventional pulverised fuel plants, pumped storage schemes, gas fired plants, nuclear plants (Pebble Bed Modular Reactor - PBMR), greenfield fluidised bed combustion technologies and renewable energy technologies (mainly wind and solar projects).

The Proposed Project

The Open Cycle Gas Turbine (OCGT) Project is premised on the need for new peaking capacity with a short lead-time to commercial operation. This project uses the research that has been carried out within Eskom for the location of a combined cycle plant as the foundation for the siting of the new OCGT plants. It focuses on two locations for the building of new plants, namely the Cape West Coast and Mossel Bay regions. At the Cape West Coast, liquid distillate fuel will be used to power 600 MW from an OCGT plant, while at Mossel Bay, natural gas from liquid natural gas will be used to power 450 MW.

In light of the need for peaking power generation, environmental screening of the potential sites are to be undertaken in order to identify the best option for location of an OCGT plant. This report covers the sites that are under consideration in the Mossel Bay region.

DESCRIPTION OF PROCESS

This report was compiled using information obtained from the following sources:

- Information from the web.
- Observations from the site visits conducted.
- Information from some of the plant manufacturers.
- Personal communications with Eskom personnel.
- Information obtained from library searches.
- Existing Eskom research reports and environmental impact assessments.

The primary reason for conducting this research scan was to detail the potential environmental impacts associated with locating Open Cycle Gas Turbines at potential sites along the Cape West Coast and Mossel Bay region. This information will subsequently be used to identify feasible alternative sites that can form the bases of an Environmental Impact Assessment (EIA). In the long term, this information would be used in the EIA and aid in obtaining environmental authorisations for the commissioning/construction of new Open Cycle Gas Turbines due to availability of information that would be required for the relevant authorities to make a decision.

ADVANTAGES

Gas-Fired Generation technologies have the following advantages:

- High combustion efficiency under all operating conditions.
- Low investment costs.
- Least environmental impact of fossil fuel options.
- Minimised pollutants and emissions.
- Fastest construction time.
- Most efficient fuel conversion.
- Capital development for the region.
- Facilitates industrial growth by introducing gas energy for other projects.
- Low visual impact of the facility.
- The rapid startup of open cycle gas turbines can minimise the need for hot or spinning reserve in larger stations to cover peak or standby capacity, thereby increasing the overall efficiency of the grid.
- Compact size and a reduction in cooling requirements enable this technology to be located closer to population centres which reduces distribution losses (1-3% possible).

DISADVANTAGES

Current disadvantages confronting wide scale implementation of the technologies are the following:

- The high cost of natural gas and its vulnerability due to the dollar price.
- There are numerous uncertainties with regards to gas development and gas availability in South Africa.
- The major percentage of the capital costs will be spent outside South Africa.

LEADERS IN THE FIELD

- ABB Power Generation Ltd.
- Siemens Power Generation.
- GEC Alstom.
- Hitachi Ltd.
- Westinghouse Canada Inc.

COST

Due to the variety of suppliers and natural gas development initiatives occurring in Africa, it is difficult to determine the costs associated with establishing a gas-fired power station in

South Africa at this time. The potential location, supplier and specification of technology to be utilised will have a major influence on the cost of establishing a gas-fired power station.

TIMESCALE

The screening study will be completed in 2004.

POSSIBLE APPLICATION FOR THE INDUSTRY

Development of a Gas-Fired power station would be preferable at coastal regions or at sea level, as there is a loss in efficiency up to 15% at high altitudes. Proximity to existing gas networks must also be considered as the additional cost of piping gas over long distances to the proposed power station will increase costs.

DIRECT / INDIRECT IMPACT ON ESKOM AND APPROPRIATE TIME SCALES

Utilisation of Gas-Fired Generation Technologies can help Eskom to diversify its primary energy mix and also meet the expected increase in demand for electricity in the future. The added development of gas markets could also aid in the long term by levelling out peaks for electricity demand.

CURRENT LOCAL RESOURCE

The current major natural gas fields that could possibly be utilised are the Kudu (Namibia) and Temane/Pande (Mozambique) gas fields, however, there is limited development of natural gas fields within South Africa. Therefore potential Gas-Fired power stations need to be located in close proximity to the infrastructure for transporting natural gas to South Africa and thereby minimise costs associated with obtaining an adequate supply of gas for the functioning of the power station.

RECOMMENDATIONS

- Gas-Fired Generation should form the basis of future generation options for South Africa as this technology offer opportunities for potential future electricity production diversification in line with Eskom's vision and the South African Energy Policy.
- The fast construction times and environmental soundness of Gas Fired Generation are a means of meeting the future demand for electricity.
- The addition of gas will diversify Eskom's energy mix and result in a skills transfer of a new technology to South Africa.

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KEYWORDS

Open Cycle Gas Turbines (OCGT)

FUTURE REVIEW

A formal Environmental Impact Assessment will be conducted in 2005.

PROJECT DETAILS

| | | |
|----------------|---|------------------------|
| Portfolio | : | GAS PROJECTS |
| Report Number | : | NON/SC/04/24933b |
| Project Number | : | PRJ04-00591300-2616 |
| Project Leader | : | Indran Govender |
| Contact Number | : | (011) 629-5642 |
| Customer | : | Resources and Strategy |

1. INTRODUCTION

1.1 BACKGROUND

Eskom's core business is in the generation, retail, trading and transmission (transport) of electricity. In terms of the Energy Policy of South Africa "energy is the life-blood of development"¹. Eskom generates approximately 95% of the electricity used in South Africa. Therefore the reliable provision of electricity by Eskom is critical for industrial development and related employment in the region and therefore a contributing factor to the overall challenge of poverty alleviation and sustainable development in South Africa.

It is important that the investment decisions taken by Eskom to be based on the energy related strategic policies and plans of South Africa. It must also integrate and consider the impact of the developments (both positive and negative) on economic development, environmental quality and social equity. These investment decisions taken include those for capital expansion projects related to power stations and powerlines.

Experience from previous Environmental Impact Assessments (EIA) indicate that many of our Eskom projects are seen out of the context in which they are planned in support of South African legislative, policy and planning requirements.

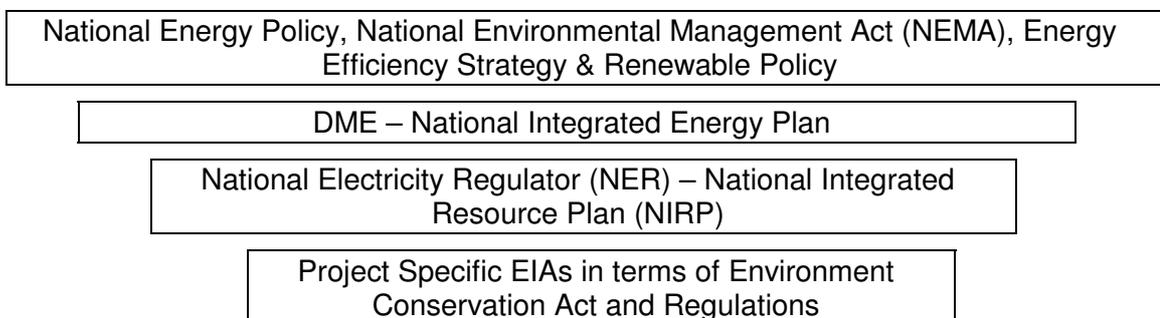
1.1.1 Need for Eskom's Expansion (Power Stations and Powerlines)

South Africa's surplus electricity supply is expected to be exhausted by 2007. In order to meet growing electricity demands, South Africa will need to develop additional power generating capacity while at the same time ensuring energy efficiency programmes are implemented to reduce and shift demand. The Integrated Resources Plan for electricity for South Africa shows that various options are being considered to meet the demands in the period 2004-2022².

1.1.2 Context in which Eskom Build Programme is undertaken

With energy planning and control falling within the mandate of the Department of Minerals and Energy (DME), the Minister of Minerals and Energy is responsible for the governance of the energy industry.

Eskom's electricity planning and decision making is undertaken in support of South African government policy, planning and legislative requirements. These include:



¹ White paper on the energy policy of the Republic of South Africa, December 1998

² National Electricity Regulator National Integrated Resource Plan 2003/4 Reference Case, 27 February 2004.

1.1.3 National Integrated Resource Plan 2003/2004 - National Electricity Regulator (NER)

The second NIRP (NIRP2) was completed in February 2004 by Eskom, in conjunction with the Energy Research Institute from the University of Cape Town and the National Electricity Regulator. The planning horizon for the study was 2003 to 2022.

Whereas the Integrated Energy Plan (IEP) focussed on broader energy planning options for meeting increasing energy demands, the NIRP2 focuses on the planning options for meeting long-term increases in electricity demand (both through demand side management and increasing electricity supplies). National electricity demand growth forecasts take into account 2.8% average annual economic growth; the development and expansion of a number of large energy-intensive industrial projects; electrification needs; a reduction in energy intensity over the 20 year planning horizon; a reduction in electricity consumers who will switch 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.

Various demand side management and supply-side options are considered in the NIRP2 process, prior to identifying the least cost supply options for South Africa. The outcome of the process confirmed that coal-fired options are still required over the next 20 years and that additional base load plants will be required from 2010. Taking into account both cost and performance data, pulverised fuel coal-fired power, fluidised bed combustion and Combined Cycle gas Turbine (CCGT) technology are supply options that are shown to be broadly comparable. The study estimated that in order to maintain a supply reserve margin of 15% over the planning period (international best practice), the accelerated return to service of mothballed coal-fired power stations, commissioning of new coal-fired options as well as CCGT power plant(s) will be required.

1.1.4 Integrated Strategic Electricity Planning (ISEP) in Eskom

Eskom's Integrated Strategic Electricity Planning (ISEP) process provides strategic projections of supply-side and demand-side options to be implemented to meet long-term load forecasts. It provides the framework for Eskom to investigate a wide range of new supply-side and demand-side technologies, with a view to optimising investments and returns.

The plan provides economically and environmentally acceptable options for flexible and timely decision-making. The focus has been to provide a robust plan, taking into account Eskom's and the shareholder's objectives.

With moderate growth in demand for electricity, additional supply-side options are anticipated for commercial service from 2006. Eskom has entered into a demand-side management programme in order to defer the commissioning of new plant. The most attractive supply-side option is the return to service of the mothballed plant referred to as the Simunye Power Stations, which were placed in reserve storage during the period of excess capacity on the Eskom system. Eskom has taken the decision to return Camden Power Station to service. The project is currently underway with the first unit planned to come on line in 2005. Eskom has investigated a variety of options, including conventional pulverised fuel plants, pumped storage schemes, gas fired plants, nuclear plants (PBMR), greenfield fluidised bed combustion technologies and renewable energy technologies (mainly wind and solar projects).

There are also potential power plant development projects external to South Africa which could form part of power trading within the Southern African Power Pool (SAPP).

In February 2004 Integrated Strategic Electricity Planning presented the demand side and supply side options in order to meet future energy demands to the Executive Committee (EXCO) Indaba. OCGT's was targeted as an option for the provision of peaking capacity in the short term and an investment-ready business case was requested to be complete by September 2004.

1.2 RESEARCH OBJECTIVES

It is anticipated that this screening study would help identify the best sites in terms of least environmental impact for locating OCGT's in the Western Cape. Proactive identification of the alternative locations would help enhance the project's viability and inform the scope of the formal Environmental Impact Assessment.

1.3 KEY QUESTIONS

The following key research questions have been formulated:

- What are the potential impacts associated with Open Cycle Gas Turbines?
- What are the impacts to be expected at the potential sites including fatal flaws?
- Which are the most preferable sites in terms of least environmental impact?

1.4 IDENTIFICATION OF SITES FOR CONSIDERATION

The past two years have seen an above average growth in the demand for electrical energy. This has put pressure on the existing installed capacity to be able to meet the energy demands into the future. In the short term, two key areas could be used to avoid unnecessary power shortages and brownouts:

- Demand Side Management
- The building of new Open Cycle Gas Turbines

The OCGT option is premised on the need for new peaking capacity with a short lead-time to commercial operation. This project uses the current knowledge and work that has been carried out within Eskom for the location of a new OCGT plant in view of the need for short project turn around times.

The technical site identification process was undertaken in July 2004 by the OCGT project team. The technical selection process involved identification of the regions with:

- The highest load variances,
- Fuel availability and costs,
- Impacts on transmission fault levels,
- Difficulty and cost of transmission integration,
- Benefits to transmission load variances
- Land availability.

The regions experiencing the largest transmission load variances were Gauteng, Western Cape and Kwa-Zulu Natal (KZN) respectively. However, the KZN and Gauteng regions could not be considered at this moment due to the lack of an adequate supply of fuel for the plant and the higher impacts on transmission fault levels for Gauteng. The Western Cape was identified as the most suitable for locating an OCGT for peaking purposes due to the fact that adequate supplies of fuel could be sourced from various suppliers and the transmission integration problems would be minimal.

Two regions were identified for the building of new plants, namely the Cape West Coast and Mossel Bay regions. Liquid distillate fuel could be used to power a 600 MW (4X150MW) OCGT plant at the Cape West Coast, and a 450 MW (3X150MW) plant at Mossel Bay. Depending on fuel availability and the demand for peaking generation, these units could be upgraded to 250 MW units thus enabling a peaking generation capacity of up to 1000 MW at the Cape West Coast and 750 MW in the Mossel Bay region, however for the purposes of this study, the feasible capacities considered were 600 MW at the Cape West Coast and 450 MW at Mossel Bay. Specific sites in these regions were identified on the basis of land availability, access to fuel and transmission integration costs. These identified sites were further subjected to environmental screening and a fatal flaw analysis to identify the best options for the physical location of OCGT power plants. This reports involves screening and a fatal flaw analysis of the Mossel Bay siting options.

2. PROJECT DESCRIPTION

Open Cycle Gas Turbine (OCGT) plants, with a 39% thermal efficiency are being considered for the two identified areas, namely the Cape West Coast and Mossel Bay regions. The first OCGT is expected to be 600 MW in output while the second is expected to be 450 MW in output and could be located at either the Proteus substation site, within the boundaries of the PetroSA refinery or adjacent to the PetroSA refinery. In terms of fuel supplies, it is envisaged that liquid fuel would be obtained from the PetroSA refinery at Mossel Bay. A pipeline from the PetroSA facilities to the power plant would supply the required fuel. It is expected that both plants will run up to a 5% load factor for a 30-year lifetime. Two years would be required prior to construction to conduct an Environmental Impact Assessment (EIA).

2.1 GAS GENERATION TECHNOLOGIES

A gas turbine as shown in Figure 1 below has a compressor to draw in fresh air from the atmosphere and compress it before passing it to the combustion chamber; where fuel is added to the compressed air and the total mixture is combusted resulting in hot gas entering the turbine at a temperature greater than 1300°C. This hot gas imparts the majority of its energy via a turbine, to both the compressor and a generator to produce electricity (Langston & Opdyke, Jr., 1997).

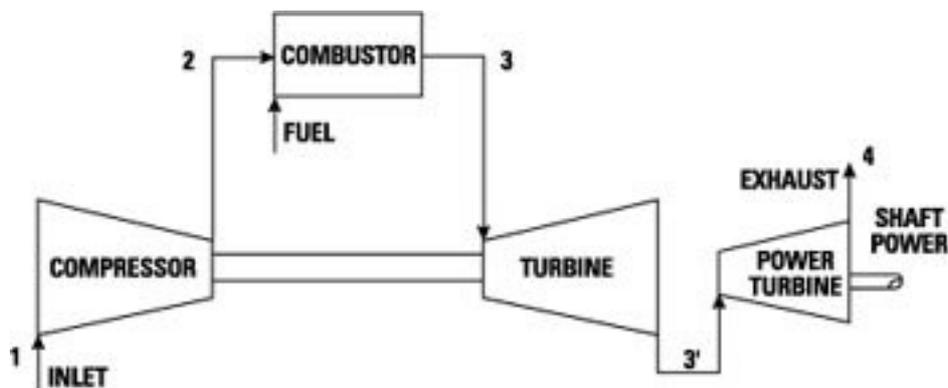


Figure 1: Schematic representation of a power generation gas turbine (Langston & Opdyke, Jr., 1997).

A typical gas turbine can range in power output from 0.05 MW to as high as 240 MW. Although gas turbines are increasingly being used for base load electrical power generation, they are most frequently used to drive compressors for natural gas pipelines, to power ships and to provide peaking and intermittent power for electric utility applications.

Some of the principal advantages of the gas turbine are that:

- It can produce large amounts of electrical power for a unit of relatively small size and weight.
- Its mechanical life is long, due to the fact that the motion of all its major components involves pure continuous rotation and not reciprocating motion as in a piston engine. In light of this the corresponding maintenance cost of a gas-fired turbine is relatively low.
- Although a gas turbine is not able to start on its own power and requires some external means (a small external motor or other source, such as another gas turbine), it can be brought up to peak output in minutes. This is substantive when compared to a coal-fired unit for which the start up time is currently measured in hours.

- It can utilise a wide variety of fuels, although natural gas is the preferable choice, diesel oil or specially treated residual oils can also be used. Combustible gases derived from blast furnaces, refineries and the gasification of solid fuels such as coal, wood chips and bagasse could also be utilised by a gas turbine.
- The general working fluid is atmospheric air and as a basic power supply unit, the cooling medium for the gas turbines can be air or water.

In the past, one of the major disadvantages of the gas turbine was its lower efficiency when compared to other internal combustion engines and power plants. However, during the last fifty years, continuous development work has pushed the thermal efficiency from 18% for the 1939 Neuchatel gas turbine to present levels of about 40% for the open cycle operation and about 55% for combined cycle operation (Langston & Opdyke, Jr., 1997). Current development work is predicting even more fuel-efficient gas turbines, with open cycle efficiencies as high as 45-47% and combined cycle plants in the 60% range (Langston & Opdyke, Jr., 1997). These projected values are significantly higher than other power generation technologies, such as steam power plants with efficiencies around 35%.

The Brayton cycle (1876) is a representation of the properties of a fixed amount of air as it passes through a gas turbine in operation. It describes what happens to air as it passes through a system and specifies the relationship between volume (V) of the air in the system and the pressure (P) it is under. Air is initially compressed increasing its pressure, as the volume of space it occupies is reduced. This compressed air is then heated at constant pressure. Heat is added by injecting fuel into the combustor and igniting it on a continuous basis. The hot compressed air is then allowed to expand reducing the pressure and temperature and increasing its volume. This expansion takes place in the turbine, where the expansion of the hot gases against the turbine blades turns a shaft. This shaft extends into a generator, which produces electricity. The Brayton cycle is completed by a process in which the volume of air is decreased (temperature decrease) as heat is absorbed into the atmosphere. A gas turbine that is configured and operated to closely follow the Brayton cycle is called the open cycle gas turbine (Langston & Opdyke, Jr., 1997).

A greater understanding of the simple cycle gas turbine and its operation can be gained by considering its three major components: the compressor, the turbine and the combustor. Their features and characteristics are outlined below:

- a) The compressor components are connected to the turbine by a shaft in order to allow the turbine to turn the compressor. Gas turbine compressors are either centrifugal or axial, or can be a combination of both. The more efficient, higher capacity axial flow compressors are used in most gas turbines. An axial compressor is made up of a relatively large number of stages, each stage, consisting of a row of rotating blades (airfoils) and a row of stationary blades (stators), arranged so that the air is compressed as it passes through each stage.
- b) Turbines are generally easier to design and operate than compressors, since the hot air flow is expanding rather than being compressed. Axial flow turbines will require fewer stages than an axial compressor. There are some smaller gas turbines that utilize centrifugal turbines, but the majority utilizes axial turbines. Turbine design and manufacture is hampered by the need to extend turbine component durability in the hot air flow. This problem is especially critical in the first turbine stage where temperatures are the highest. Special materials and elaborate cooling schemes must be used to allow turbine airfoils that can melt at approximately 1000⁰C to survive in airflows with temperatures as high as 1700°C.

c) A combustor consists of at least three basic parts; a casing, a flame tube and a fuel injection system. The casing must withstand the *cycle pressures* and may be a part of the structure of the gas turbine. It encloses a relatively thin-walled flame tube within which combustion takes place and a fuel injection system. A successful combustor design must satisfy many requirements and has been a major challenge from the earliest gas turbines. The relative importance of each requirement varies with the application of the gas turbine, with some requirements being of a conflicting nature. This necessitates design compromises. The major design requirements reflect concerns over engine costs, efficiency and the environment and can be classified as follows:

- High combustion efficiency under all operating conditions.
- Low levels of unburned hydrocarbons and carbon monoxide, low oxides of nitrogen at high power and no visible smoke.
- A low pressure drop, three to four percent is common.
- Combustion must be stable under all operating conditions.
- Consistently reliable ignition must be attained at very low temperatures.
- Smooth combustion, with no pulsations or rough burning.
- A low temperature variation for good turbine life requirements.
- Long useful life (thousands of hours), particularly for industrial use.
- Multi-fuel use, characteristically natural gas and diesel fuels are used for industrial applications but they can operate on a range of other fuels.
- Designed for minimum cost, repair and maintenance.

In land applications, additional equipment can be added to the simple cycle gas turbine, leading to increases in efficiency and/or the output of a unit. Three such modifications are Regeneration, Intercooling and Reheating.

- *Regeneration* involves the installation of a heat exchanger through which the turbine exhaust gases pass. The compressed air is then preheated in the exhaust gas heat exchanger, before it enters the combustor. A well designed regenerator that has a highly effective heat exchanger and small pressure drop increases the efficiency over the simple cycle value. However the relatively high cost of such a regenerator must also be taken into account. Regenerated gas turbines increase efficiency by 5-6% and are even more effective in part load applications.
- *Intercooling* also involves the use of a heat exchanger that cools compressor gas during the compression process. If the compressor consists of a high and a low-pressure unit, the intercooler could be mounted between them to cool the flow and decrease the work required for compression in the high pressure compressor. The cooling fluid could be atmospheric air or water.
- *Reheating* occurs in the turbine and is a way to increase turbine work without changing compressor work or melting the materials from which the turbine is constructed. If a gas turbine has a high pressure and a low-pressure unit at the back end of the machine, a reheater (usually another combustor) can be used to "reheat" the flow between the two turbines. This can increase efficiency by 1-3% (Langston & Opdyke, Jr., 1997).

The main advantage coupled to gas technology is the fact that it is considered a "clean" fuel in comparison to either coal or oil. It produces virtually no particulate matter (PM₁₀) and sulphur dioxide (SO₂), less oxides of nitrogen (NO_x) and considerably less carbon dioxide (CO₂). The OCGT functions in a similar manner to a CCGT but the exhaust heat is discharged at a higher level because it is not used to reheat steam to drive the steam turbine of a CCGT. The residual heat is discharged to the environment through flue gas discharge at a height of 40-60 metres. Environmental impacts are expected to be small when compared to other fossil fuel generating technologies and a pumped storage scheme,

however, they are larger than those of a CCGT plant. These impacts are related to land usage, gaseous and particulate emissions, noise levels, visual and aesthetic impacts.

2.2 IMPACTS ASSOCIATED WITH OCGT'S

2.2.1 Emissions to Air

- Oxides of Sulphur

The negligible quantity of sulphur present in natural gas means that the concentrations of SO₂ in the flue gas emitted will be minimal. When using distillate fuel oil, the concentration of SO₂ in the flue gas will be limited due to the comparatively low sulphur content of distillate fuel oil (max. 0.3% by weight).

A sulphur content of 5%, does not pose an impact to the environment as the resultant SO_x emissions are well below the allowable regulatory limits.

- Oxides of Nitrogen

The production of nitrogen oxides is a part of fossil fuel burning however this can be limited by the Dry Low NO_x (DLN) combustion system used with certain gas turbines. This system includes the use of a wet control system when burning distillate fuel oil, which has lower levels of nitrogen.

The DLN combustion system is designed to minimise the generation of oxides of nitrogen during the combustion process, but it cannot eliminate them completely. The waste gases are emitted from approximately 40-60m high stacks at sufficient velocity and temperature for a substantial plume rise. This causes dispersion of the NO_x formed during combustion so that the impact on background level concentrations is insignificant. Combustion NO_x emissions as a result of the oxidation of nitrogen compounds in the fuel is not significant due to the low levels of nitrogen compounds in natural gas and distillate fuel oil.

Another NO_x source is from the fixation of atmospheric nitrogen in the flame. This is known as thermal NO_x. Dry low NO_x burners are designed to minimise thermal NO_x generated by fixation of atmospheric nitrogen in the flame. The rate of generation of thermal NO_x is generally accepted as being an exponential function of flame temperature and the time that the hot gas mix is at flame temperature. Flame temperature is highest when there is just enough fuel to react with all of the available oxygen. This is called the stoichiometric mixture. It follows that adjustment of the fuel/oxygen mix away from the stoichiometric mix will reduce the flame temperature. This adjustment can be achieved by either increasing or decreasing the fuel (fuel rich or fuel lean) for available oxygen. It is better to control the NO_x emissions through the fuel lean method since this means that fuel is not wasted and unburned hydrocarbons are not released into the atmosphere.

NO_x formation due to atmospheric nitrogen is however dependant on the maximum flame temperature. The combustion system of the gas turbine must be designed to ensure efficient and reliable turbine operation, while minimising the creation of oxides of nitrogen (NO_x) at source.

- Oxides of Carbon

Gas contains a much lower proportion of carbon than oil or coal, so the use of gas as a primary fuel causes less CO₂ to be produced per unit of electricity. For a fixed amount of energy generated by either gas or coal, gas-fired generation produces approximately 60% of the CO₂ that would normally be produced by coal-fired generation.

Together with the lower carbon content of gas and the greater conversion efficiencies, the OCGT plants result in CO₂ emissions which are about 40% of those emitted from an equivalent coal fired station. Some carbon is converted to carbon monoxide (CO) on combustion. The fuel to air ratio is a principle factor in the production of CO and it is in the interest of both combustion efficiency and overall economy that CO production is minimised.

- Unburned Hydrocarbons

Multi-burner combustion chambers, which characterise most gas turbines, ensure almost complete combustion of all fuels. Approximately 99.99% combustion efficiency results in a minimum of unburnt hydrocarbons (UHC) and negligible CO emissions.

Under mid-merit operating conditions, using natural gas (dry) with a 15% oxygen content, the concentration of UHC in the exhaust gas amounts to only 4ppmv. This corresponds to just 18mg/kWh. Approximately half of this is methane, which is assessed to contribute the equivalent of 30 times more to the greenhouse effect than carbon dioxide. In light of this, the emissions can be considered the same as 740mg CO₂ per kWh. This is insignificant when compared to the actual amount of CO₂ that is released. Burning distillate oil or other fuels increases the UHC emission but this is dependent on the properties of the fuel utilised.

The non-methane components of the total UHC, also known as Volatile Organic Carbons (VOC's) are particularly important because of their ability to form ozone in the atmosphere in conjunction with NO_x and sunlight. They contribute roughly half of the total UHC.

- Particulate Matter

The emission of particulate matter from the combustion process will be negligible. This is because there are negligible quantities of solid matter in the fuel and the air drawn into the gas turbine compressors will be cleaned by passing through filters. These filters must be replaced periodically. The frequency of replacement is typically between 6 months and 2 years. When burning distillate fuel oil, a small emission of particulate matter occurs as the oil will contain very small quantities of ash (approx. 0.01% by weight).

- Heat

The majority of the losses resulting from an open cycle gas turbine are from discharge in the form of hot exhaust gas to the atmosphere. This means that some of the useful energy in the fuel supplied to the turbine is rejected directly into the atmosphere. However, converting the open cycle to a combined cycle gas turbine to obtain a higher than 55% efficiency, results in the plant generating more power for the same amount of fuel thereby leading to a corresponding reduction in heat rejected to the environment. Heat emissions could have an impact on the macroclimate of an area, however, this can only be quantified through atmospheric dispersion modelling.

2.2.2 Emissions to Water

The operation of the gas turbine, where air will be passed through a compressor, heated, expanded through a turbine and then exhausted, may result in the deposition of airborne impurities on the compressor blading. Soiling of the compressor results in reduction of the thermal efficiency of the gas. Cleaning of the compressor is therefore important, if maximum efficiency is to be attained.

Compressors may be cleaned either off line when cold, or on-line during operation. Periodic off line cleaning, combined with cyclic on-line cleaning has been identified as the most effective method of achieving consistently high levels of performance over long periods of operation. On line washing is done with reserve feed water, while for off-line washing, a detergent solution is used.

The gas turbine blading may be cleaned while the plant is on-line or off-line using a hydrocarbon based solvent, which will be mixed with water to form an emulsion. In the course of on-line cleaning, the solvent and any dissolved oils and greases scoured from the blading will be completely burned in the combustion chamber of the gas turbine. The effluent produced by the off line cleaning will be drained from the compressor housing using a controlled process, passed through an oil separator and pumped to an adequate disposal point. The best anti-fouling agent that can be utilised in the cooling water system is a sodium hypochlorite solution, containing approximately 15% available chlorine. The hypochlorite solution will be injected directly into the cooling water by a controlled pumping system. The minimum effective injection of hypochlorite necessary will be used. The residual oxidant in the purge water must be monitored.

2.2.3 Land Requirements

A 1600 MW Combined Cycle Gas Turbine can be sited on 7 ha compared with 200 ha for an equivalent coal-fired facility. Gas-fired power stations do not require the substantial structures required for transport, handling and storage of the coal. In addition, the huge areas required for the disposal of ash and waste is also not required. This area can be further reduced due to the fact OCGT's do require Heat Recovery Steam Generators (HRSG) associated with the combined cycle part of the part.

2.2.4 Water Use

An OCGT does not require water for condenser cooling. The only use of potable water is that required for cleaning, fire fighting and for domestic use thus the water use by an OCGT can be considered as negligible.

2.2.5 Waste Generation

Gas-fired electricity generation technologies generates less waste compared to conventional coal fired stations that produce large volumes of ash. Waste generation is minimal, as there are neither coal discards nor ash disposal requirements. The only general solid waste is as for an office or workshop for ± 100 people.

Environmental damages that occur as a result of waste disposal from the plant are expected to be negligible providing that the wastes are minimised and recycled with only the residual disposed of at a licensed waste disposal facility.

2.2.6 Noise Impacts

An OCGT can generate high noise levels that are associated with air intakes for gas turbines, the combined operation of the gas turbines, generators, transformers, pumps pneumatic controls, diesel generator sets and generator ventilation systems. The gas turbine air intake facility will cause the highest level of residual noise (78dB at 1m from the gas turbine building) as it is located outside (ABB, 1995). Acoustic enclosures will reduce the internal build up of noise and minimise its transmission outside. The induced vibration caused by the rotating machines is a localised event that can be easily mitigated through proper foundation designs and pipe racks that support the facility.

The maximum acceptable levels in terms of the World Bank noise guidelines for an industrial or commercial area are an equivalent sound level (Leq) of 70 dB(A) over an hourly period. This should be measured at receptors located outside the property boundary. The maximum allowable increase in the existing ambient noise levels is Leq 3 dB(A) where existing ambient levels exceed Leq 45 dB(A).

2.2.7 Aesthetics

Conventional coal-fired power plants are usually characterised by high stacks and large boiler furnaces however open cycle plants are relatively inconspicuous due to the absence of boiler furnaces and lower stack heights present.

The low stack height (40-60m above ground) is due to no particulate emission and the low gas emissions typical of gas fired power stations. The area required for siting a gas-fired power station is roughly 30% of that required for a reference coal fired unit. If the requirements for a coal stock yard had to also be taken into consideration, the comparative area would be further reduced to 20%.

The overall visual intrusion is minimal owing to the lower profile design of a gas-fired power station and to a large extent as the clean facility that results from the absence of coal dust, ash and fine particulate. The compact nature of the plant and the reduced need for auxiliary equipment such as precipitators, coal staithes, and ash dumps mean a much-reduced land demand in comparison to conventional coal-fired facilities thereby leaving more land available for other development purposes. The supply of natural gas / liquid fuel to the plant can be achieved via underground piping and this has substantially less impact when compared to a coal-fired facility, which would have to obtain its coal supplies by a conveyer, trucks or rail transport. The visual impact of the power station structures depends also on their relationship to the landscape.

3. THE MOSSEL BAY ALTERNATIVES

Various sites were considered in the site selection process to locate OCGT's in the Mossel Bay Cape region. The factors considered were technical issues (such as land availability, fuel supply, transmission integration requirements) and environmental constraints (such as compatibility with current land use, ecologically sensitive areas, and sense of place). It must be noted that specific information for the Mossel Bay area could not be easily sourced thus the analysis is based primarily on the findings of the site visit.

3.1 SITE ALTERNATIVES

A number of potential sites were identified for further consideration in the Mossel Bay region, viz. within the PetroSA Refinery boundaries, the Proteus substation and adjacent to the PetroSA refinery. The industrial area of Mosdustria was also considered, however, this option was discarded due to space limitations and various economic factors. The location of these sites is indicated in Figure 2 below.

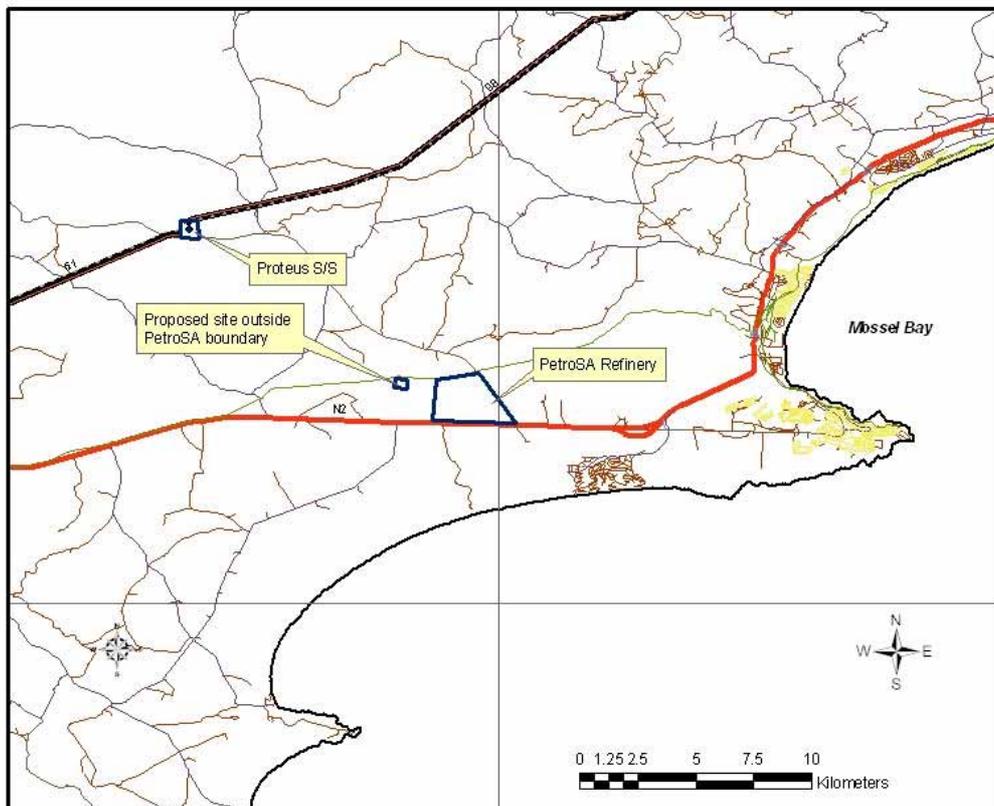


Figure 2: Locality map showing the alternative Mossel Bay sites under consideration

3.2 BIOPHYSICAL ENVIRONMENT

This chapter provides a brief description of the surrounding environment in and around the Mossel Bay area.

- Climate

Mossel Bay receives between 400–600mm of rainfall per annum, peaking in spring and autumn. Light hail may occur once or twice a year, and mist occurs on an average between 20 – 25 occasions annually (PetroSA, undated).

South-easterly winds are predominant especially in summer. The wind in winter blows mainly from a north-westerly direction. The windiest season is mid-winter to spring, which has an average wind speed of 20km/h. The average wind speed in summer is 15km/h (PetroSA, undated).

The mean daily maximum temperature is 21°C and the mean minimum temperature is 14°C. The average annual temperature is 17.6°C (PetroSA, undated).

- Topography

The topography of the area is characterised by undulating hills with deep valleys and prominent high terraces. These terraces command magnificent views in all directions, viz. the Indian Ocean towards the south and the Outeniqua Mountain range towards the north. The PetroSA Refinery is situated on a plateau or plain at an altitude of between 160–180 metres above mean sea level (mamsl) to the west of the port.

- Geology

Mossel Bay is characterised by sandstone and shale beds of the Table Mountain and Bokkeveld Groups. North of the town of Mossel Bay are rocks of the Enon Formation and other similar younger deposits which are of Cretaceous and Tertiary age. These rocks are deposited in an east to west elongated trough and are considered to extend offshore, outcropping locally (eg Seal Island) (PetroSA, undated).

- Groundwater

The Kouga Formation is the principal aquifer in the refinery area. Its recharge area lies to the north of the refinery. Immediately north of the refinery the groundwater lies within the bedrock (PetroSA, undated).

- Flora

The area falls broadly into the category of a mosaic of Thicket and Renosterveld.

The vegetation of the Thicket Biome grows as a closed shrubland to low forest dominated by evergreen, sclerophyllous or succulent trees, shrubs and vines. The Thicket Biome shares floristic components with almost all other Phytochoria and as a result few endemic species are recorded in this vegetation type.

The Renosterveld falls within the Fynbos Biome, which is localised in distribution and is threatened by urbanisation, agriculture and alien invasion. Typically, Renosterveld consists of a matrix of pioneer low branched shrubs one to two metres in height. A herb layer usually

occurs beneath in which grasses predominate and deciduous geophytes and annuals are seasonally prominent. However, in South Africa overgrazing has resulted in shrubs becoming more dominant (Hill and Associates 2001). Some lower valleys are infested with rooikrans, wattle and other alien plants

- Fauna

Terrestrial faunal diversity in the area is restricted due to farming activities, however, there is evidence of various small mammals (eg rodents, porcupine, grysbok and other small antelope) (Hilland Associates 2001). PetroSA's Nature Reserve is located adjacent to the refinery. Several fauna species can be found in the nature reserve eg springbok, Burchell's zebra, grysbok, Cape hares, striped mouse, vlei rat and a wide diversity of birds (PetroSA, undated).

Marine fauna found in the waters near Mossel Bay include, amongst others, sharks, whales and seals. Mossel Bay is reputable for the presence of Great white sharks and whales and as a result this has resulted in Mossel Bay becoming a popular tourist destination for boat trips and cage diving. Whales come into the bay each season from June through to November to mate and calve. Approximately 3000 to 4000 seals make use of Seal Island (Hilland Associates 2001).

3.3 SOCIO-ECONOMIC ENVIRONMENT

Mossel Bay has always been a fishing port of substance with limited commercial cargo activity, however, the launch of the Moss gas project has brought about an increase in its activities by assisting in servicing the oil industry. These two industries are currently the major role-players in the development of the port area. Road and rail networks have been developed to connect Mossel Bay to the consumer markets and industrial zones of South and Southern Africa. The relatively small size of the port necessitates that the Port of Port Elizabeth supports it in various specialised fields, ie industrial relations, training, financial management, equipment and infrastructure procurement.

PetroSA Refinery, near Mossel Bay, is an important local and national contributor to the economy and employs an estimate of 1000 people, with about 7000 depending on it for their livelihood (SRK, 2002).

Mossel Bay and the surrounding areas, being located on the Garden Route, is a popular tourist attraction (Crowther Campbell & Associates, 2004b).

3.4 SITE SCREENING

This section attempts to provide a more detailed description of the site and identify the potential impacts that might occur as a result of the development of an OCGT at the alternative locations identified in Mossel Bay. It must be noted that specific information for the Mossel Bay could not be easily sourced thus the analysis is based primarily on the findings of the site visit.

3.4.1 The PetroSA site

The proposed site within the PetroSA Refinery boundaries is located to the NW of the refinery between the contractors village and the waste disposal area (see Figures 3 & 5). The waste disposal area, located to the west of the refinery, is authorised to accept hazardous and general wastes. The refinery is visually prominent, with mainly impacts to the surrounding farms and traffic passing the refinery on the N2.

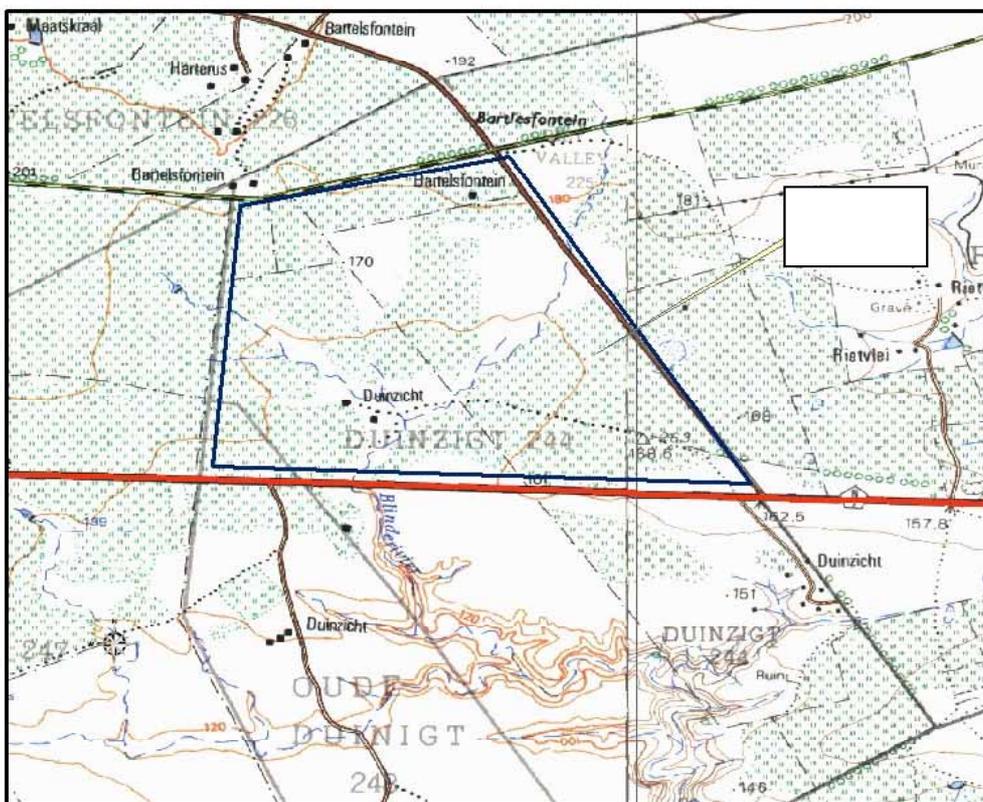


Figure 3: Location of the PetroSA site.

The flora and fauna originally present in the area was largely replaced by farming prior to the PetroSA Refinery being built. The site is largely modified and substantial portions of the area are occupied by the refinery activities. There are no known sites of archaeological importance in the study area. However, during past development projects Stone Age tools were found approximately 200m north of the office building at the waste disposal site (Crowther Campbell & Associates, 2004b).

Substantial noise levels are present at the site due to the refinery's various activities. The air quality is not considered to be problematic due to the substantial levels of emissions that are

currently generated by the refinery and the landfill. However, the cumulative impacts are difficult to quantify and must be investigated by a specialist.

Detailed environmental information could not be obtained on the PetroSA Refinery site. PetroSA has carried out an air quality study and noise study, however, the results thereof were not available for inclusion in this assessment. The assessment is therefore largely based on the site visits undertaken.

The PetroSA site is visually prominent to traffic passing on the N2 and the surrounding farmers. The location of an OCGT within the boundaries of the PetroSA site, next to the landfill site, is not expected to have any significant visual impacts on the area. This is due to the fact that the OCGT plant would blend in with the rest of the refinery equipment. The ambient noise and air quality levels are currently quite high as a result of the various processes occurring on the site and the OCGT is not expected to substantially contribute to these levels. These impacts can be considered as minimal and negative. The site has been altered to a large extent and very few, if any, remnants of the original vegetation exists on the site. The development of an OCGT on the site would therefore not impact on the biodiversity of the site in any way.



Figure 4: View of PetroSA Refinery from the Proteus substation site.

PetroSA currently has established infrastructural facilities for its activities. This could be utilised for the construction and operation of the power station, obviating against the need to create new infrastructure. This further reduces the impacts that can be expected as a result of infrastructural development. The establishment of a power station in the area would complement to the industrial activities that are currently occurring.

The construction of a transmission linking to the Proteus substation is expected to impact on the surrounding farmers however an optimal route will have to be determined and impacts

thereof reduced to socially and environmentally acceptable levels. A summary of the impacts to be expected is provided in Table 1.

Table 1: Summary of impacts to be expected for an OCGT at the PetroSA Refinery.

| IMPACT | EXTENT | SIGNIFICANCE | TYPE |
|------------------------------|----------|--------------|----------|
| Biodiversity | Local | Neutral | Neutral |
| Noise & Aesthetics | Regional | Low | Negative |
| Emissions | Regional | Low | Negative |
| Sense of place | Regional | Low | Negative |
| Socio Economic | Regional | Low | Positive |
| Infrastructural Availability | Regional | Low | Negative |
| Archaeology & Culture | Local | Low | Negative |

3.4.2 Adjacent to the PetroSA site

The proposed site adjacent to the PetroSA Refinery is located to the NW of the refinery in close proximity to the contractors village and the waste disposal area (See Figure 5 below). The less prominent visually in comparison to the refinery due to it being partially screened by the land fill site, however it will impact on the surrounding farms and traffic passing the refinery on the N2.



Figure 5: Location of the site adjacent to the PetroSA Refinery.

The impacts associated with this site are similar in nature to the impacts associated with the PetroSA site however it is currently utilised for farming purposes and the establishment of a power station will adversely impact on this activity. The site can be considered marginally more sensitive than the site within PetroSA's boundaries due to its' less degraded state, however, the site has been altered to a large extent and very few, if any, remnants of the

original vegetation exists on the site. A summary of the impacts to be expected is provided in Table 2.

Table 2: Summary of impacts to be expected for an OCGT adjacent to the PetroSA Refinery.

| IMPACT | EXTENT | SIGNIFICANCE | TYPE |
|------------------------------|----------|--------------|----------|
| Biodiversity | Local | Low | Negative |
| Noise & Aesthetics | Regional | Low | Negative |
| Emissions | Regional | Low | Negative |
| Sense of place | Regional | Low | Negative |
| Socio Economic | Regional | Low | Positive |
| Infrastructural Availability | Regional | Low | Negative |
| Archaeology & Culture | Local | Low | Negative |

3.4.3 Proteus Substation

The Proteus substation is located about 12 km to the NW of the PetroSA Refinery (See Figures 6 and 7). It is visually prominent due to the fact that it is situated on a koppie. The flora present on the site comprises Strandveld Dune Thicket, Renosterveld and Sand Plain Fynbos. The vegetation of the site was originally impacted upon during the construction of the substation however, the vegetation has re-established itself, and a few exotic species are present. Figure 7 below indicates the vegetation that surrounds the substation.

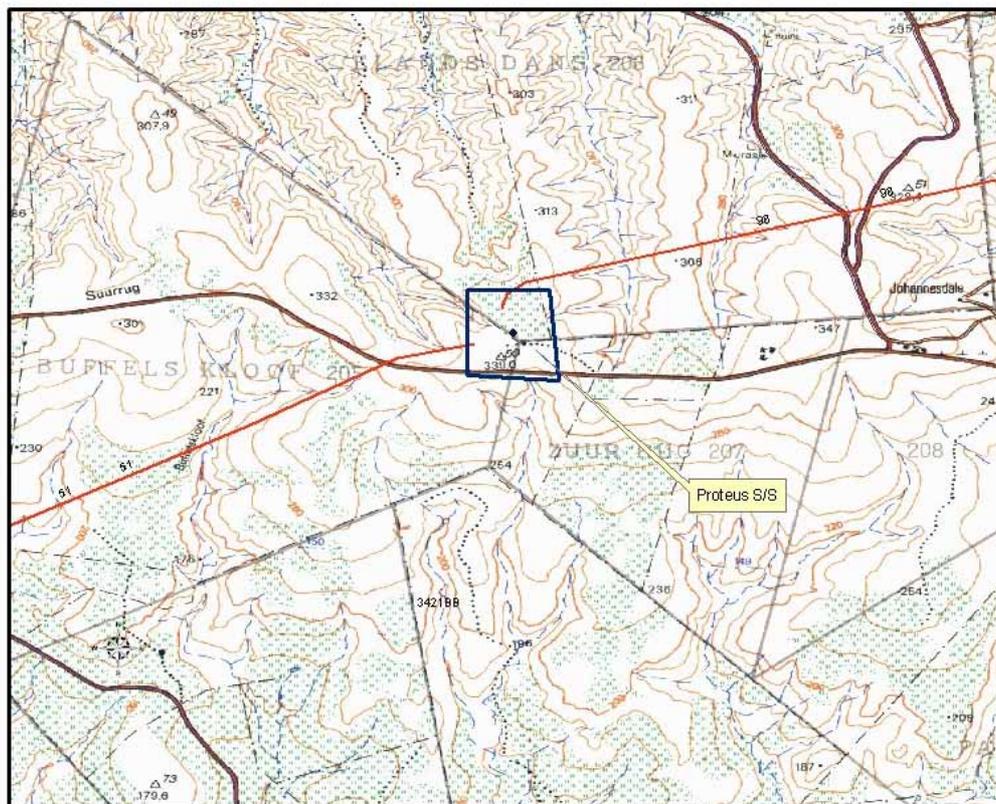


Figure 6: Location of the Proteus substation site.

The substation is separated from the PetroSA Refinery by a number of farms and a large proportion of the indigenous vegetation has been transformed by agricultural practices. The substation site is however surrounded by relatively undisturbed natural vegetation and these exhibit fairly high levels of species diversity and endemism.

The site possesses numerous habitats necessary for faunal communities. A wide variety of mammals and reptiles could be present. A large number of birds are present in the area.



Figure 7: View of Proteus substation and the surrounding vegetation.

The development of an OCGT power station at the Proteus substation is expected to substantially affect the sense of place in that the area is largely undeveloped. Although the substation and transmission lines are present on the site, the area is still generally rural in nature. The site is surrounded by relatively undisturbed natural vegetation comprising Strandveld Dune Thicket, Renosterveld and Sand Plain Fynbos. Impacts on biodiversity could be substantial in that the vegetation on the site could be of conservation value and it provides numerous habitats for various faunas. This could be considered to be of a high magnitude and negative in nature.

In addition to the impacts to be expected by the farms, the nature of the area would be altered in that the noise levels would increase as a result of increased traffic flow and the power station. Additional transmission lines and possible fuel pipelines would change the nature of the area to a more industrial setting. The farmers will be impacted by the fuel pipeline however an optimal route will have to be identified and impacts mitigated to socially and environmentally acceptable levels. A summary of the impacts to be expected is provided in Table 3.

Table 3: Summary of impacts to be expected for an OCGT at the Proteus S/S.

| IMPACT | EXTENT | SIGNIFICANCE | TYPE |
|------------------------------|---------------|---------------------|-------------|
| Biodiversity | Local | High | Negative |
| Noise & Aesthetics | Regional | High | Negative |
| Emissions | Regional | Low | Negative |
| Sense of place | Regional | High | Negative |
| Socio-Economic | Regional | Medium | Neutral |
| Infrastructural Availability | Regional | Medium | Negative |
| Archaeology & Culture | Local | Low | Neutral |

4. SUMMARY AND CONCLUSIONS

The impacts associated with Open Cycle Gas Turbines are inherently low. The levels of emissions generated are generally lower than a coal-fired plant due to the higher efficiencies of gas turbines and the low levels of sulphur and nitrogen in the fuel. Wastes generated are also minimal due to the lack of the huge quantities of ash that are produced by a conventional coal-fired power station. The CO₂ emissions are approximately half of that produced by a reference coal fired plant. Aesthetic impacts are also reduced due to the compact and lower profile nature of the gas-fired plant. The absence of ash dumps, coal stockyards and coal transport structures further reduces the aesthetic impacts associated with a gas-fired power station. In addition, this reduces the demand for land to locate a power station.

A Life Cycle Assessment conducted by Wibberley *et al.*, in 1999 summarised the impacts of generating 1MWh of electricity from an Open Cycle Natural Gas Turbine as follows:

| | |
|-------------------------|---------------------------|
| Resource energy | 10.76 GJ |
| Greenhouse Gases | 608 kg CO ₂ -e |
| NO _x | 1.94 kg |
| SO _x | 4.68 g |
| Particulate Matter | 0.43 g |
| Fresh water | 0.002 m ³ |
| Solid waste to landfill | 1.4 kg |

It must be noted that the impacts outlined above are those associated with the use of natural gas as a fuel. These impacts would increase with the use of liquid distillate fuel.

4.1 COMPARATIVE ASSESSMENT OF THE SITES

In this section, the potential sites comparatively assessed to determine the most preferable sites in terms of least environmental impact. The following scoring system is utilised to rank the alternatives.

0 = No impact or positive

1= Low

2= Medium

3= High

The sites with the lowest aggregate scores are the best environmental options.

4.1.1 The Mossel Bay Alternatives

The PetroSA site has largely been modified through industrial development and it is highly unlikely that any species of concern are present on the site any more. The refinery site is highly industrialised with numerous structures and activities occurring around the area. Substantial noise levels and atmospheric emissions are currently being generated by PetroSA's activities. The primary visual impacts are limited to the surrounding farms and traffic passing the site on the N2. The site adjacent to the refinery has similar impacts but is currently utilised for farming activities and the development of an OCGT plant will adversely impact on this. The impacts will be marginally higher due to its less degraded state. In contrast, the Proteus substation is located at a substantially higher point from the PetroSA Refinery and is visible from a large area. The site was disturbed during the construction activities for the substation however the flora has re-established itself to large extent with a

few exotics present. The area surrounding the substation is largely undisturbed and can be considered as a valuable habitat for species of significance. A large variety of birds are also present at the site. A summary of evaluation of the sites is outlined in Table 7.

Table 4: Comparative Assessment of the Mossel Bay Sites

| Impacts | PetroSA Refinery | Adjacent to the PetroSA Refinery | Proteus S/S |
|------------------------------|------------------|----------------------------------|-------------|
| Biodiversity | 0 | 1 | 3 |
| Noise and Aesthetics | 1 | 1 | 3 |
| Emissions | 1 | 1 | 1 |
| Sense of place | 1 | 1 | 3 |
| Socio-Economic | 0 | 0 | 0 |
| Infrastructural Availability | 1 | 1 | 2 |
| Archaeology and Cultural | 1 | 1 | 0 |
| Total | 5 | 6 | 12 |

4.2 AUTHORISATION AND SITING A GAS-FIRED POWER STATION

In conclusion, it can be seen that the both the sites around the PetroSA refinery are the most feasible sites for building a new OCGT plant at Mossel Bay. However, the establishment of facilities for commercial electricity generation is listed as item 1(a) of Regulation No. 1182 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), and therefore requires approval from the relevant environmental authority. A detailed Environmental Impact Assessment (EIA) for the location of OCGT's at the identified sites must be submitted and approved by the relevant authority prior to any construction activities.

A generation study in Bangladesh evaluated twelve possible sites based on an extensive matrix of environmental and economic factors (Gore, 1995). The factors included, but were not limited to:

- Availability of land
- Land-use patterns
- Infrastructural capabilities and constraints
- Access to water resources
- Transmission requirements
- Severity of environmental impacts
- Geological constraints
- Hydrological constraints
- Access to fuel sources and associated impacts
- Accessibility to waste disposal sites.

In addition to the above, an Environmental Impact Assessment must address the following:

- Impacts to the natural environment – This should address amongst others, the issues on impacts to surface and ground water supplies, fauna and flora, impacts on the ambient air quality.
- Impacts to the current transport infrastructure – It must be established if the development is going to alter the current transport pattern and if the current infrastructure is going to

be placed under stress. If so, adequate upgrades to the transport network must be proposed.

- Areas of high cultural and heritage significance must be identified and avoided if possible.

5. REFERENCES

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ANNEXURE 2: ACCEPTANCE OF PLAN OF STUDY FOR SCOPING

0448742423



Perwysing
Reference EG12/2/1-74-Farm 320/R (5263)
Isalathiso

Navrae
Enquiries ID Swanepoel
Inhliza

Datum
Date 2005-05-24
Umhla

Departement van Omgewingsake en Ontwikkelingsbeplanning
Department of Environmental Affairs and Development Planning
ISEBE leMicimbi yeNdalo esiNgqongileyo noCwangciso loPhuhliso

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The Director
Eskom Transmission
PO Box 1091
Johannesburg
2000

Attention: Ms Carol Streaton

Tel : (011) 800 5411

Fax: (011) 800 3917

Dear Madam

APPLICATION AND PLAN OF STUDY FOR SCOPING: MOSSEL BAY OPEN CYCLE GAS TURBINE PLANT AND TRANSMISSION LINES ("THE PROPOSED DEVELOPMENT")

The above application and Plan of Study for Scoping dated 8 March 2005 and 8 April 2005 respectively, refer.

In accordance with regulation 4(3A) of Government Notice No. R1183 of 5 September 1997, (as amended), the Director General of the National Department of Environmental Affairs and Tourism has agreed that the above-mentioned application be considered by the Department of Environmental Affairs and Development Planning.

0448742423

You are hereby informed that the above-mentioned Plan of Study for Scoping has been accepted by the Director: Integrated Environmental Management (Region A).

You should now proceed with scoping as per the approved Plan of Study for Scoping. The scoping report must comply with the requirements of Regulation 6 of GN No R1183 of 5 September 1997, as amended.

This Department reserves the right to revise its initial comments and request further information from you based on any new or revised information received.

Yours faithfully



FOR DIRECTOR:INTEGRATED ENVIRONMENTAL MANAGEMENT (REGION A)

CC: Mr Kamal Govender (Ninham Shand)
Mr Danie Smit (DEAT)

Fax (021) 424 5588
Fax (012) 310 3688

ANNEXURE 3: MEDIA NOTICES



OMGEWINGSBEORDELING (OIB)

DOPSIKLUSGASTURBIENEKRAGST ASIEBRANDSTOFTOEVOERPYPLYN,
SUBSTASIEENTRANSMISSIELE YNEBYMOSSSELBAAI

Kennisgewing kragtens regulatsie 4(6) van Goewermentskennisgewing No. R1183, onder artikel 26 van die Wet op Omgewingsbewaring (No. 73 van 1989), soos gewysig, word hiermee 'n aansoek gedoen vir die oprigting van 'n oopsiklusgasturbiene (OSGT) kragstasie, brandstof toevoerpylyn, substasie en transmissielyste naby die PetroSA fasiliteit te Mosselbaai. Eskom het OSGT kragopwekking ge-identifiseer as 'n toepaslike metode om die huidige aanvraag in spitsydkragopwekking aan te spreek.

'n Agtergrondinligtingsblad met 'n beskrywing van die voorgestelde projek en OIB proses is op aanvraag beskikbaar. Die agtergrondinligtingsblad is ook beskikbaar op die Eskom webblad by www.eskom.co.za/eia. 'n Opedag en gepaardgaande openbare vergadering sal op 3 Mei 2005 plaasvind. Die doel is om die voorgestelde projekte motiveer asook om enige navrae en voorbehoude aan te spreek. Die opedag sal plaasvind van 16:00 tot 19:00, gevolg deur die publieke vergadering van 19:00 tot 20:30, te Mosselbaai Biblioteeksaal in Marshstraat 99.

Ninham Shand Raadgewende Dienste is aangestel om die voorgeskrewe OIB proses te onderneem. Vir enige navrae, kommentaar en registrasie as 'n belanghebbende party voorsien asseblief u naam, besonderhede en motivering van belangstelling in die saak aan die aangeduide kontakpersoon binne 14 dae van die verskyning van hierdie kennisgewing.

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EIA PROCESS

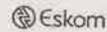
MOSSEL BAY OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY
PIPELINE, SUBSTATION AND TRANSMISSION LINES

Notice is given in terms of Regulation 4 (6) of the regulations published in Government Notice No. R. 1183, as amended, under Section 26 of the Environment Conservation Act (Act No. 73 of 1989) of the intention to construct an open cycle gas turbine (OCGT) power plant, fuel supply pipeline, substation and transmission lines adjacent to the PetroSA plant near Mossel Bay. The OCGT plant has been identified by Eskom as a means of providing peaking capacity to meet the projected national demand.

A Background Information Document (BID) is available on request and describes the proposed project as well as the Environmental Impact Assessment process to be followed. Alternatively, the BID can be accessed from the Eskom project website: www.eskom.co.za/eia. An Open Day followed by a Public Meeting will be held on 3 May 2005 to present the need and motivation for the proposed project and to elicit any issues or concerns that you may have. The Open Day will be held from 16:00 to 19:00 and the Public Meeting from 19:00 to 20:30, in the Mossel Bay Library Hall at 99 Marsh Street.

Ninham Shand Consulting Services has been appointed to undertake the required environmental process. Should you have any issues of concern or wish to register as an interested or affected party, please submit your name, contact information and comments / interest to the contact person below within 14 days of publication of this advertisement.

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NINHAM SHAND
CONSULTING SERVICES

EIA PROCESS

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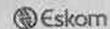
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NINHAM SHAND
RAADGEWENDE DIENSTE

OMGEWINGSINVLOEDBED OORDELING (OIB)
OPSKAKELINGSTUDIË VAN KRAAGSTASIE, OORDELTTOEVOERPIPLYN,
SUBSTASIE EN TRANSMISSIELYNE BY MOSSELBAAI

Kennis geskied kragtens regulasie 4(6) van Goewermentskennisgewing No. R1183, onder artikel 26 van die Wet op Omgewingsbewaring (No. 73 van 1989), soos gewysig, dat aansoek gedoen word vir die oprigting van 'n oopsiklusgassturbie (OSGT) kragstasie, brandstoftoevoerpiplyn, substasie en transmissie lyne naby die PetroSA fasiliteit te Mosselbaai. Eskom het OSGT kragopwekking geïdentifiseer as 'n toepaslike metode om die huidige aanvraag in spitsyd kragopwekking aan te spreek.

'n Agtergrondinligtingsblad met 'n beskrywing van die voorgestelde projek en OIB proses is op aanvraag beskikbaar. Die agtergrondinligtingsblad is ook beskikbaar op die Eskom webblad by www.eskom.co.za/eis. 'n Opedag en gepaardgaande openbare vergadering sal op 3 Mei 2005 plaasvind. Die doel is om die voorgestelde projek te beskryf asook om enige navrae en voorbehoude aan te spreek. Die opedag sal plaasvind van 16:00 tot 19:00, gevolg deur die publieke vergadering van 19:00 tot 20:30, te Mosselbaai Biblioteeksaal in Marshstraat 99.

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OPSKAKELINGSTUDIË VAN KRAAGSTASIE, OORDELTTOEVOERPIPLYN,
SUBSTASIE EN TRANSMISSIELYNE BY MOSSELBAAI

Kennis geskied kragtens regulasie 4(6) van Goewermentskennisgewing No. R1183, onder artikel 26 van die Wet op Omgewingsbewaring (No. 73 van 1989), soos gewysig, dat aansoek gedoen word vir die oprigting van 'n oopsiklusgassturbie (OSGT) kragstasie, brandstoftoevoerpiplyn, substasie en transmissie lyne naby die PetroSA fasiliteit te Mosselbaai. Eskom het OSGT kragopwekking geïdentifiseer as 'n toepaslike metode om die huidige aanvraag in spitsyd kragopwekking aan te spreek.

'n Agtergrondinligtingsblad met 'n beskrywing van die voorgestelde projek en OIB proses is op aanvraag beskikbaar. Die agtergrondinligtingsblad is ook beskikbaar op die Eskom webblad by www.eskom.co.za/eis. 'n Opedag en gepaardgaande openbare vergadering sal op 3 Mei 2005 plaasvind. Die doel is om die voorgestelde projek te beskryf asook om enige navrae en voorbehoude aan te spreek. Die opedag sal plaasvind van 16:00 tot 19:00, gevolg deur die publieke vergadering van 19:00 tot 20:30, te Mosselbaai Biblioteeksaal in Marshstraat 99.

Ninham Shand Raadgewende Dienste is aangestel om die voorgeskrewe OIB proses te onderneem. Vir enige navrae, kommentaar en registrasie as 'n belanghebbende party voorsien asseblief u naam, besonderhede en motivering van belangstelling in die saak aan die aangeduide kontakpersoon binne 14 dae van die verskyning van hierdie kennisgewing.

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ENVIRONMENTAL ASSESSMENT PROCESS
MOSSSEL BAY OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY
PIPELINE, SUBSTATION AND TRANSMISSION LINES

Eskom proposes to construct an open cycle gas turbine (OCGT) power plant, fuel supply pipeline, substation and transmission lines adjacent to the PetroSA plant near Mossel Bay. The OCGT power plant has been identified by Eskom as a means of providing peaking capacity to meet the projected increase in the national demand for electricity.

The second Public Meeting for this project will be held on 13 June 2005, to present the Draft Scoping Report and to elicit any issues or concerns that the public may have. The report will be available for review in the Mossel Bay Public Library, the D' Almeida Public Library and at the website www.eskom.co.za/eia, from 3 June 2005. **The Public Meeting will be held on 13 June 2005 from 15:00 to 20:00 in the Mossel Bay Library Hall at 99 Marsh Street.** It will comprise a presentation at 15:00 which will be repeated at 18:00, with opportunity for discussion throughout.

Should you have any comment or wish to register as an interested or affected party, please submit your name, contact information and comments / interest in the matter to the contact person below by 23 June 2005.

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OMGEWINGSBEOORDELING PROSES
OOPSIKLUSGASTURBIENE KRAGSTASIE, BRANDSTOFTOEVOERPYLYN,
SUBSTASIE EN TRANSMISSIELYNE BY MOSSSELBAAI

Eskom is van voorneme om 'n oopsiklusgasturbiene (OSGT) kragstasie, brandstoftoevoerpylyn, substasie en transmissielyne naby die PetroSA fasiliteit te Mosselbaai opterig. OSGT kragopwekking is geïdentifiseer as 'n toepaslike metode om die huidige aanvraag in spitstyd kragopwekking in die land aan te spreek.

Die tweede publieke vergadering sal op 13 Junie 2005 plaasvind. Die doel is om enige navrae of voorbehoude oor die Voorlopige Omvangsbepalingsverslag aantespreek. Die verslag sal by die Mosselbaai Biblioteek en D' Almeida Biblioteek beskikbaar wees, sowel as op die webwerf www.eskom.co.za/eia, vanaf 3 Junie 2005. **Die publieke vergadering sal plaasvind op 13 Junie 2005, vanaf 15:00 tot 20:00 in die Mosselbaai Biblioteeksaal by Marshstraat 99.** Die vergadering sal bestaan uit 'n aanbeiding teen 15:00, wat herhaalsal wees teen 18:00, met deurgaans geleentheid vir bespreking.

As u enige navrae of kommentaar het, of wil registreer as 'n belanghebbende party, voorsien asseblief 'n aamb esonderhede en belangstelling in die saak aan die aangeduide kontakpersoon voor 23 Junie 2005.

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ANNEXURE 4: BACKGROUND INFORMATION DOCUMENT

ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION AND TRANSMISSION LINES AT MOSSEL BAY

APRIL 2005

BACKGROUND INFORMATION DOCUMENT



Background

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.

In the most recently approved ISEP plan (June 2003), the need for increased electricity supply by about 2006 was identified. This is to meet the gradual annual growth of about 3% in electricity 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 increased electricity supply plan, Open Cycle Gas Turbines (OCGTs) were identified as a means to provide peaking capacity in the short term. Peaking capacity refers to those periods in the mornings and evenings when electricity demand is greatest. OCGTs are a favoured means of providing peaking capacity for two reasons. Firstly, they can be constructed within a relatively short space of time and secondly, once constructed, they can begin to generate electricity within a few minutes of starting the power plant.

As a consequence of this forward planning process, two OCGT plants are proposed in the Western Cape, one in Atlantis near to Cape Town and the other adjacent to the PetroSA facility (previously known as Mossgas) near Mossel Bay. The information presented and EIA process described in this Background Information Document (BID) refers to the proposed Mossel Bay OCGT power plant and associated infrastructure only.

Ninham Shand Consulting Services has been appointed by Eskom to undertake an Environmental Impact Assessment (EIA) process for the activities relating to the proposed OCGT power plant, fuel supply pipeline, substation and transmission lines (Figure 1).

The purpose of this BID is to:

- ▶ Provide a background to and description of the proposed project;
- ▶ Describe the study process, particularly in terms of the opportunities for public participation (Figure 2); and
- ▶ Invite Interested and Affected Parties (I&APs) to register as participants in the process and to raise any issues or concerns they may have regarding the project.



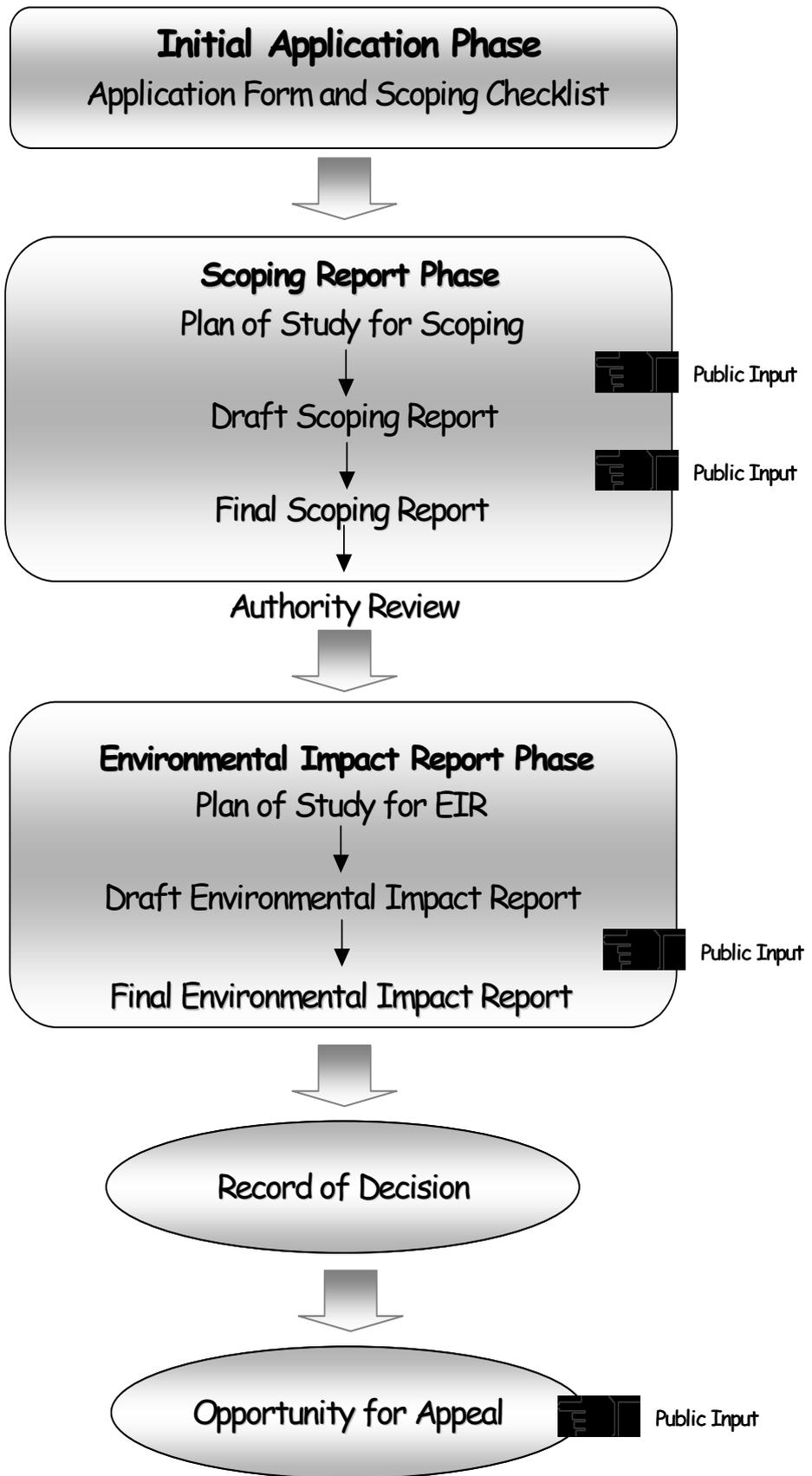


Figure 2: Environmental Impact Assessment process

The proposed project

In essence, an OCGT power plant produces electricity by means of hot gas that turns a turbine, which powers a generator. The hot gas is produced by introducing fuel to compressed air in a combustion chamber. The fuel in this case would be kerosene and the plant would exhaust to the atmosphere.

The proposed project comprises the following components:

- ▶ The OCGT power plant (made up of three or four gas turbines with an output of 150 to 250 MW each) adjacent to the existing PetroSA facility. The footprint of the OCGT power plant and associated substation would be approximately 9 ha;
- ▶ A fuel supply pipeline to transport kerosene from the PetroSA facility to the OCGT plant;
- ▶ A substation adjacent to the OCGT plant, to feed the generated electricity to the transmission lines; and
- ▶ Two transmission lines of 400kV capacity each from the OCGT substation to Proteus substation, to introduce the generated electricity into the national grid. Proteus substation is approximately 10 km north west of PetroSA (see Figure 1).

It is envisaged that the OCGT power plant would operate for on average of 2 hours each morning and evening. This however is dependent on electricity demand and system requirements. It could thus be necessary to operate for up to 8 hours at a time.

Legal requirements and EIA process

Regulation 1182, promulgated in terms of the Environment Conservation Act (ECA) (No 73 of 1989), identifies certain activities, which “*could have a substantial detrimental effect on the environment*”. These scheduled activities require environmental authorisation from the competent environmental authority.

With reference to the schedule, 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 infrastructure ... for the transportation of any such substance; and (the) manufacturing, storage, handling, treatment or processing facilities for any such substance*” are such listed activities. Accordingly, the proposed OCGT power plant, fuel supply pipeline, substation and transmission lines require authorisation from the competent environmental authority via the EIA process outlined in Regulation 1183 of the ECA. This EIA process is summarised in Figure 2. Although the primary trigger of the ECA regulations is the generation and transport of electricity, the proposed project also entails other activities that are listed in terms of Regulation 1182. These activities include the access road to the OCGT plant and the emissions that trigger the Atmospheric Pollution Prevention Act (No. 45 of 1965).



The EIA process consists of a Scoping Report Phase and an Environmental Impact Report (EIR) Phase. The purpose of the Scoping Report Phase is to identify and outline potential positive and negative environmental impacts, both social and biophysical, associated with the proposed project. Public participation forms an integral component of both the Scoping and EIR Phases.

The Scoping Report will identify those aspects that will require specialist investigation and assessment during the EIR Phase. To date, the following specialist studies have been identified as being necessary:

| Specialist study | Specialist undertaking the work |
|---|---------------------------------|
| Air quality impacts and risk management | AirShed Planning Professionals |
| Noise impacts | Jongens Keet Associates |
| Visual impacts | CNdV africa |
| Botanical impacts | Nick Helme Botanical Surveys |
| Avifaunal impacts | Ninham Shand |
| Heritage resources impacts | Archaeology Contracts Office |
| Socio-economic impacts | Urban-Econ |

Provision has also been made for a review of the entire process by a recognized review consultancy, Mark Wood Environmental Consultants.

Consideration of Alternatives

This project has been informed by strategic investigations that have been undertaken by Eskom, viz. the ISEP and site screening processes. These investigations will be reviewed and vetted by the environmental team before presenting them as the point of departure for this EIA process. The public would have the opportunity to comment on these investigations at the start of the Public Participation Process, although these high-level alternatives will only be considered as part of the review of Eskom's strategic planning.

There are several project level alternatives that will be evaluated during the EIA process. These include:

- ▶ Fine scale location of the OCGT power plant and substation on the proposed property;
- ▶ Emission control measures;
- ▶ Alignment of the transmission lines;
- ▶ The type of transmission line tower design used; and
- ▶ Alignment of the fuel supply pipeline and access road.

Following the identification of the complete set of project alternatives, the financial, technical and environmental implications of each alternative would be screened during the Scoping Report Phase. Feasible alternatives would be identified for comparative assessment during the EIR Phase.



Public Participation

Phase 1

The primary purpose of this phase is to present the motivation for the proposed project and elicit issues and comments that I&APs (the public and key stakeholders) may have in this regard. Phase 1 comprises the following steps.

- ▶ Undertaking initial consultation with key stakeholders (viz. affected landowners, local authorities etc.);
- ▶ Advertising the project in local, regional and national newspapers, inviting registration of I&APs and eliciting initial comment;
- ▶ Making this BID available to identified I&APs;
- ▶ Holding a public forum for key stakeholders and the public at large;

Phase 2

The primary purpose of Phase 2 is to present the draft Scoping Report to I&APs, to show how their comments to date have been incorporated into the report and to elicit any additional issues of concern and/ or comment. Phase 2 comprises the following steps:

- ▶ Incorporating public comment received into the Draft Scoping Report, as an Issues Trail;
- ▶ Lodging the Draft Scoping Report in public libraries/ municipal offices and on the Eskom project website;
- ▶ Holding a second public forum to present the Draft Scoping Report. All registered I&APs will be notified of the meeting and lodging of the report and be provided with copies of the Executive Summary by mail;

Phase 3

Phase 3 is aimed at presenting the draft Environmental Impact Report (EIR) to I&APs. This phase comprises:

- ▶ Lodging the Draft EIR in public libraries/ municipal offices and on the Eskom project website;
- ▶ Holding a final public forum to present the Draft EIR. All registered I&APs will be notified of the meeting and lodging of the report and be provided with copies of the Executive Summary by mail;
- ▶ Finalising the EIR by incorporating all public comment received into an updated Issues Trail; and
- ▶ Notifying registered I&APs of the outcome of the EIA process.

Phase 4

This is the 30 day appeal period, during which I&APs have the opportunity to appeal against the Record of Decision (ROD) issued by the environmental authority. The appeal period commences as soon as the ROD is issued.



A three-week comment period is provided for each of the iterations in public participation.

The requirements of the EIR Phase would be informed by the findings of the Scoping Report. Accordingly, a Plan of Study for EIR (which would outline the approach to the EIR phase with respect to alternatives to be assessed and the Terms of Reference for the Specialist studies) would be included in the Scoping Report and would therefore be open to public review.

The key stakeholders identified to date comprise the following:

- ▶ Affected landowners, viz.
 - Patryfontein
 - Leeuwin
 - Haelkraal
 - Bartelsfontein
 - Harterus
 - Buffelskloof
 - Zuurrug;
- ▶ PetroSA;
- ▶ Voelvlei Farmers Union;
- ▶ Ward Councillor;
- ▶ Municipal Planning Dept;
- ▶ Municipal Electrical Dept;
- ▶ Mossel Bay Environmental Partnership;
- ▶ WESSA, Southern Cape;
- ▶ Earthlife Africa;
- ▶ Cape Nature;
- ▶ Energy Research Centre;
- ▶ Telkom;
- ▶ Dept of Trade & Industry;
- ▶ Dept of Minerals & Energy;
- ▶ Civil Aviation Authority;
- ▶ Spoornet; and
- ▶ National Energy Regulator.

This is by no means a complete list and if you know of any other I&APs that we have not yet identified, please let us know.



How you can get involved

You have been identified as an I&AP due to your possible interest in the project, through your involvement in the initial public consultation, or as a result of your response to the press adverts. Should you wish to raise any issues of concern regarding the proposed project, please complete the attached Response Form and return it to Ninham Shand by fax or by using the postage paid envelope provided.

If you wish to receive further information, invitations to meetings, etc. please register yourself as an I&AP. You can register online at www.eskom.co.za/EIA, (where the various reports will also be available as the process unfolds), or by contacting the following people.

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**OMGEWINGSINVLOEDBEOORDELING:
VOORGESTELDE OOPSIKLUSGASTURBIENE KRAGSTASIE,
BRANDSTOFTOEVOERPYPLYN, SUBSTASIE EN TRANSMISSIELYNE BY
MOSELBAAI**

APRIL 2005

AGTERGRONDINLIGTINGSBLAD



Agtergrond

Eskom is besig met 'n geïntegreerde strategiese elektrisiteits beplanning (GSEB) proses om langtermyn opsies aangaande die verskaffing en gebruik van elektrisiteit in Suid Afrika te identifiseer.

Die nuutste goedgekeurde GSEB (Junie 2003) identifiseer die noodsaaklikheid om elektrisiteitsverskaffing teen 2006 te verhoog, om sodoende aan die huidige gemiddelde jaarlikse groei van 3% in elektrisiteitsverbruik te voldoen. Die heringebruikneming van opgebergde kragstasies is 'n wenslike opsie en 'n verskeidenheid ander opsies vir elektrisiteitsopwekking, wat wissel van steenkool- en kernaagedrewe kragstasies tot hernubare kragbronne, word deurentyd oorweeg.

Gegewe die beplande verhoogte elektrisiteitslewering, is die gebruik van oopsiklus gasturbienes (OSGTs) geïdentifiseer as 'n moontlikheid om spitskragopwekking in die korttermyn te voorsien. Spitskragopwekking verwys na die tydperke soggens en saans wanneer elektrisiteitsverbruik die hoogste is. OSGTs is geskik vir die doel van spitskragopwekking vir twee redes. Eerstens kan OSGTs binne 'n kort bestek opgerig word en tweedens beskik hulle oor die vermoë om vinnig volle kraglewering kapasiteit te bereik nadat hulle aangeskakel is.

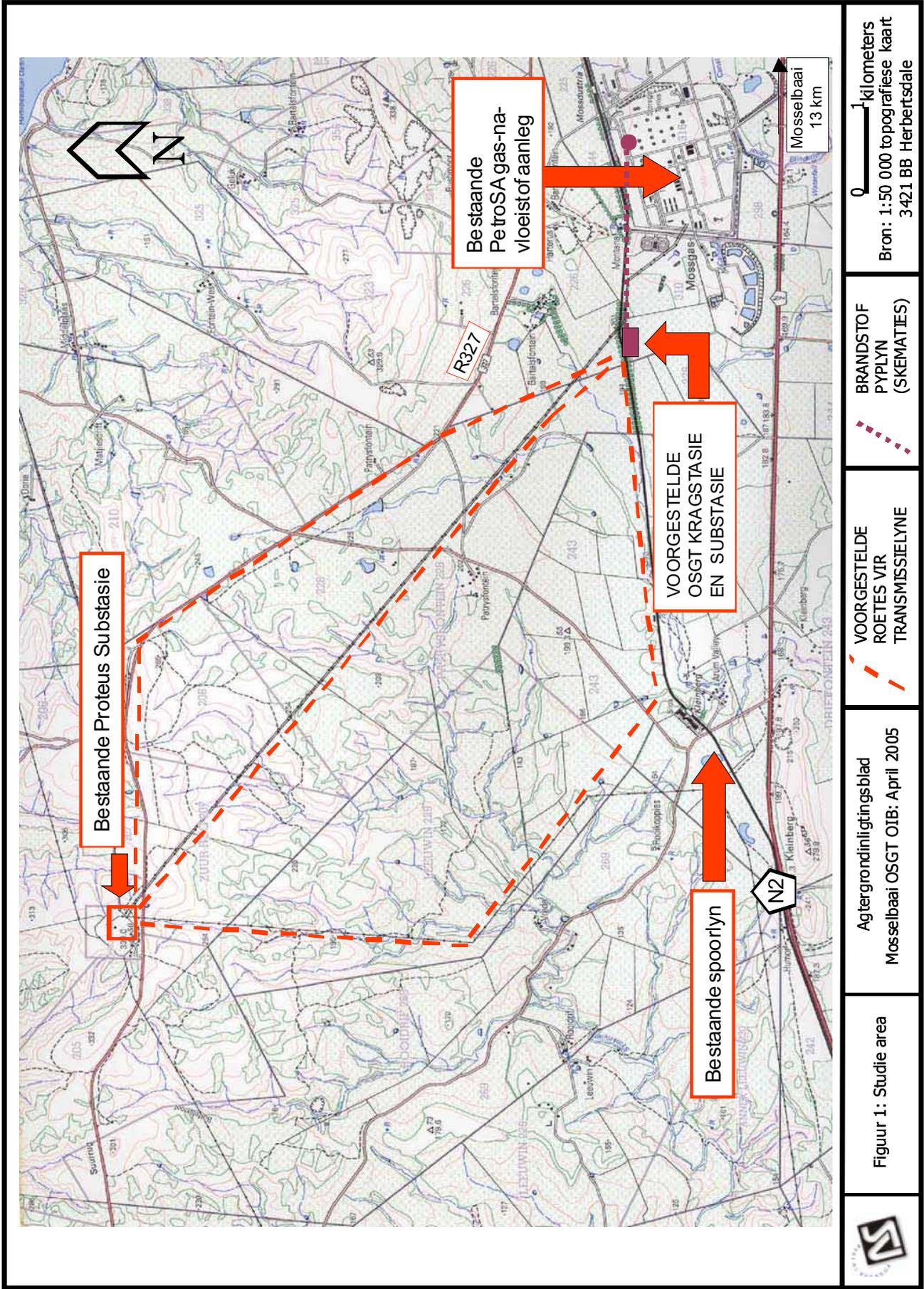
As deel van die langtermynbeplanning voorsien Eskom om twee OSGT kragstasies in die Weskaap op te rig. Een word beplan by Atlantis naby Kaapstad en die ander langs die PetroSA fasiliteit (ex-Moss gas) naby Mosselbaai. Die inligting verskaf en Omgewingsinvloedbeoordeling (OIB) proses beskryf in hierdie agtergrondinligtingsblad is slegs van toepassing op die voorgestelde Mosselbaai OSGT kragstasie.

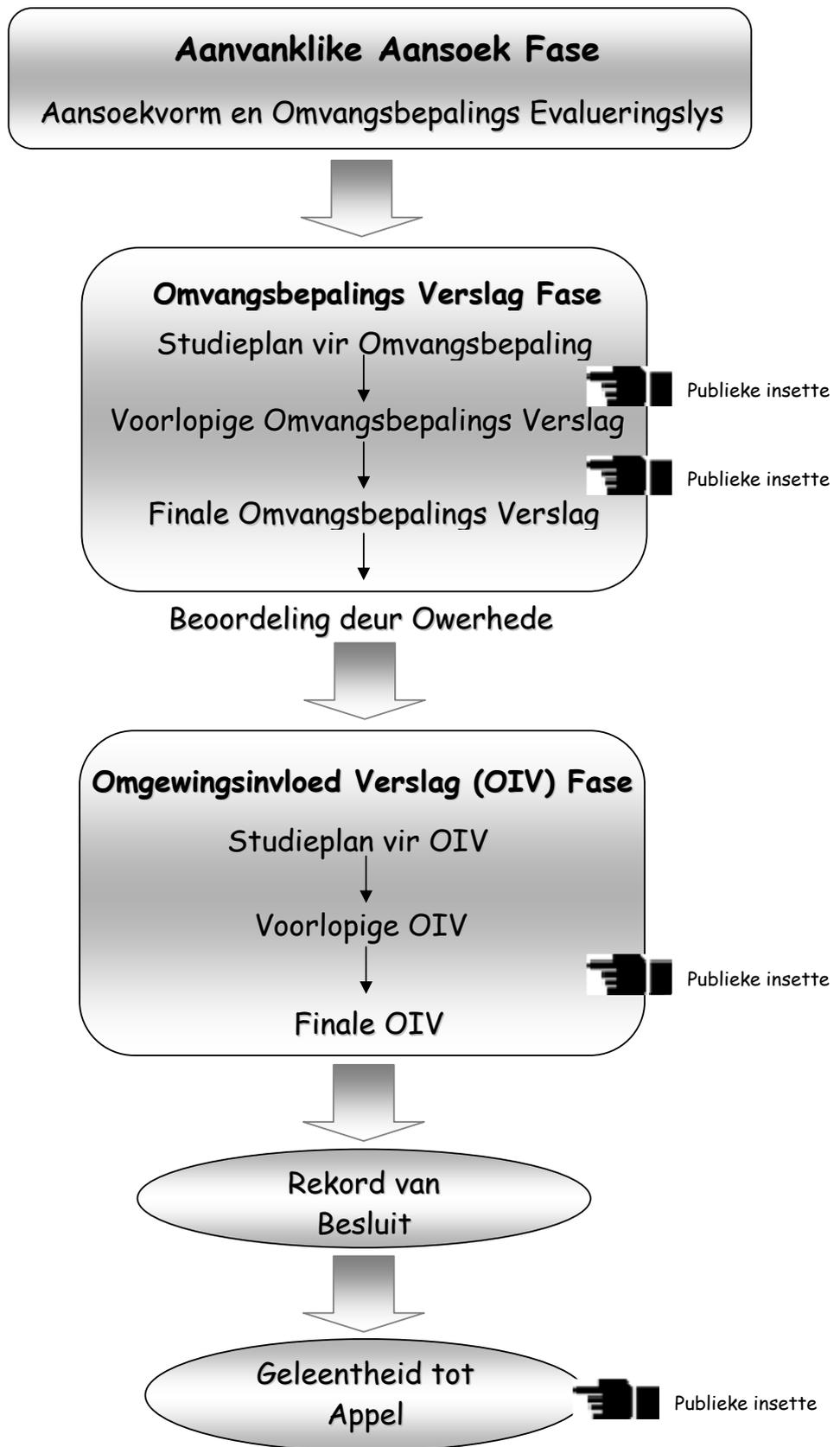
Ninham Shand Raadgewende Dienste is deur Eskom aangestel om 'n OIB proses te onderneem vir die aktiwiteite wat betrekking het op die voorgestelde OSGT kragstasie, brandstoftoevoerpylyn, substasie en transmissielyne (sien Figuur 1).

Die doel van hierdie agtergrondinligtingsblad is om:

- ▶ Die agtergrond en 'n beskrywing van die voorgestelde projek te verskaf;
- ▶ Die studieproses te beskryf, veral in terme van publiekedeelname tydens die proses (sien Figuur 2); en
- ▶ Belangstellendes en geïnteresseerde partye/persone wat geraak mag word deur die ontwikkeling, uit te nooi om te registreer as deelnemers in die proses of om terugvoering te gee aangaande die projek.







Figuur 2: Omgewingsinvloedbeoordelings Proses

Die voorgestelde projek

'n OSGT kragstasie wek elektrisiteit op deur middel van warm gas wat 'n turbiene aandryf en wat op sy beurt aan 'n opwekker gekoppel is. Die warm gas is die produk van die verbranding van 'n brandstof en lug in 'n hoëdruk verbrandingskamer. Parafien (kerosene) sal as brandstof gebruik word en die uitlaatgasse sal in die atmosfeer vrygestel word.

Die voorgestelde projek bestaan uit die volgende komponente:

- ▶ Die OSGT kragstasie (bestaande uit twee of drie eenhede met 'n opwekkingsvermoë van 150 tot 250 MW elk) naasliggend aan die bestaande PetroSA fasiliteit. Die fasiliteit sal ongeveer 9 hektaar beslaan;
- ▶ 'n Brandstoftoevoerpylyn vir die verskaffing van parafien van die PetroSA fasiliteit na die OSGT kragstasie;
- ▶ 'n Substasie aangrensend aan die OSGT kragstasie, vir die verspreiding van opgewekte elektrisiteit na die transmissielyste; en
- ▶ Twee transmissielyste, elk met 'n 400kV kapasiteit, van die OSGT substasie na Proteus substasie, met die doel om die opgewekte elektrisiteit na die nasionale netwerk in te versprei. Proteus substasie is ongeveer 10 km noordwes van die PetroSA fasiliteit (sien Figuur 1).

Aanvanklik sal die OSGT kragstasie daagliks vir 'n gemiddeld van twee ure in die oggend en twee ure in die aand operasioneel wees. Die moontlikheid bestaan egter dat die stelsel se aanvraag vir elektrisiteit van tyd tot tyd kan verhoog, in sulke gevalle mag die kragstasie tot agt ure operasioneel wees.

Wettlike vereistes en OIB prosesse

Goewermentskennisgewing No. R1182, gepromulgeer in terme van die Wet op Omgewingsbewaring (No. 73 van 1989), identifiseer sekere aktiwiteite wat "n beduidende impak op die omgewing mag hê". Die gelyste aktiwiteite vereis dat 'n omgewingsgoedkeuring van die verantwoordelike omgewingsdepartement verkry moet word.

Met verwysing na die skedule, die "konstruksie, oprigting en opgradering van fasiliteite vir kommersieële elektrisiteits opwekking met 'n kapasiteit van minstens 10 megawatts en infrastruktuur vir grootmaat kraglewering" en (met verwysing na enige stof wat gevaarlik of skadelik is en beheer word deur nasionale wetgewing), "die konstruksie, oprigting en opgradering van infrastruktuur ... vir die vervoer van enige sodanige stof, en (die) vervaardiging, stoor, hantering, behandeling of prosesseringsfasiliteite vir enige sodanige stof" is gelyste aktiwiteite. Volgens wetgewing moet die voorgestelde OSGT kragstasie, brandstoftoevoerpylyn, substasie en transmissielyste goedkeuring kry van die verantwoordelike omgewingsdepartement met behulp van die OIB prosesse soos voorgeskryf in Regulasie 1183 van die Wet op Omgewingsbewaring. Vir 'n skematiese voorstelling van die EIA prosesse sien Figure 2. Opwekking van elektrisiteit and gepaartgaande verspreiding is die primêre rede vir hierdie OIB maar ingevolge die Regulasie 1182



van die wetgewing moet die sekondêre aktiwiteite ook ondersoek word. Die aktiwiteite sluit in toegangspaaie en atmosferiese besoedeling.

Die EIA proses bestaan uit 'n Omvangsbepaling (Scoping) Verslag fase en 'n Omgewingsinvloed Verslag (OIV) fase. Die doel van die Omvangsbepaling Verslag fase is die identifisering en beskrywing van potensieële positiewe en negatiewe omgewings impakte, beide sosiaal en biofisies, wat gepaard gaan met die voorgestelde projek. Publieke deelname is 'n integrale deel van beide Omvangsbepaling en OIV fases.

In die Omvangsbepaling Verslag word aspekte geïdentifiseer wat spesialis ondersoeke mag vereis gedurende die OIV fase. Huidiglik is die volgende spesialis studies ge-identifiseer:

| Spesialis ondersoeke | Specialist undertaking the work |
|--|---------------------------------|
| Atmosferiese besoedeling en risiko bestuur | AirShed Planning Professionals |
| Geraas impakte | Jongens Keet Associates |
| Visuele impakte | CNdV Africa |
| Botaniese impakte | Nick Helme Botanical Surveys |
| Impakte op voëllewe | Ninham Shand |
| Kultuur /Historiese impakte | Archaeology Contracts Office |
| Sosio-ekonomiese impakte | Urban-Econ |

As deel van die proses sal 'n erkende onafhanklike eksterne konsultant (Mark Wood Environmental Consultants) aangestel word om die hele proses te monitor en evalueer.

Inagneming van Alternatiewe

Strategiese ondersoeke reeds gedoen het as grondslag gedien vir toekomstige besluitneming in die proses, dit sluit in die GSEB en die terrein evalueeringsprosesse. Alhoewel die voorafgaande ondersoeke as grondslag sal dien vir die ondersoek sal die omgewingsspan die ondersoeke her-evalueer en bevestig. Die gemeenskap sal ook geleentheid gebied word om hieroor kommentaar te lewer tydens die aanvang van die publieke deelname proses, alhoewel hierdie hoër orde veranderlikes slegs oorweeg sal word as deel van die hersiening van Eskom se strategiese beplanning.

Verskeie projek alternatiewe sal ondersoek word tydens die OIB proses, dit sluit in:

- ▶ Mikro skaal ontwerp en plasing van die OSGT kragstasie en substasie op die voorgestelde perseel;
- ▶ Besoedeling beheer meganismes;
- ▶ Uitleg van die transmissielyn;
- ▶ Hoogspanningsmas ontwerp; en
- ▶ Uitleg van die brandstofpylyn en toegangspad.



Na voltooiing van die identifikasie van volledige projek alternatiewe sal die finansieële, tegniese en omgewings invloede van elke alternatief gedurende die Omvangsbepaling Verslag fase ge-evalueer word. Werkbare alternatiewe sal ge-identifiseer word vir vergelykende evalueering tydens die OIV fase.

Publieke Deelname

Fase 1

Die primêre doel van die fase is om die motivering vir die voorgestelde projek asook die identifisering van enige bekommernisse en onduidelikhede wat belanghebbendes en geaffekteerde persone/groepe mag ondervind, beskikbaar te stel. Fase een bestaan uit die volgende stappe:

- ▶ Onderneem aanvanklike konsultasie met sleutel rolspelers (bv. grondeienaars, plaaslike regering ens.);
- ▶ Die adverteer van die projek in plaaslike, streeks en nationale koerante en gepaardgaande terugvoer en registrasie van belanghebbendes;
- ▶ Beskikbaarstel van die agtergrondinligtingsblad aan belanghebbendes; en
- ▶ Fasiliteering van 'n publieke forum vir sleutel rolspelers en die breë publiek;

Fase 2

Die primere funksie van Fase 2 is die voorlegging van die voorlopige Omvangsbepaling Verslag aan belanghebbendes as bewys dat kommentaar in aggeneem is tydens die aanvanklike proses. Verder om enige bykommende kommentaar en voorbehoude in te samel en by te voeg. Fase 2 bestaan uit die volgende stappe:

- ▶ Die op rekord stel van die opvolgbare uitkomst, gebaseer op kommentaar ontvang, in die voorlopige Omvangsbepaling Verslag;
- ▶ Plasing van die voorlopige Omvangsbepaling Verslag in openbare biblioteke/ munisipale kantore en op die Eskom projek webwerf;
- ▶ Onderneem 'n tweede publieke forum om die voorlopige Omvangsbepaling Verslag bekend te stel. Alle geregistreerde belanghebbendes sal in kennisgestel word van die vergadering en vrystelling van die verslag, en kopieë van die opsomming sal aan almal geos word;

Fase 3

Fase 3 stel ten doel om die voorlopige OIV bekend te stel. Die fase bestaan uit die volgende:

- ▶ Plasing van die voorlopige OIV in openbare biblioteke/ munisipale kantore en op die Eskom projek webwerf;
- ▶ 'n Finale publieke forum on die voorlopige OIV bekend te stel. Alle geregistreerde belanghebbendes sal in kennis gestel word van die



vergadering en bekendstelling van die verslag en hulle sal ook per pos 'n kopie van die opsomming ontvang;

- ▶ Finaliseering van die OIV deur insluiting van alle openbare kommentaar om opgevolgde uitkomst te bereik; en
- ▶ Stel alle belanghebbendes in kennis aangaande die uitkoms van die OIB proses.

Fase 4

Hierdie is die 30 dae tyd tot appèl waartydens die belanghebbendes geleentheid gebied word om teen die besluit van die owerheid aangaande die OIB te appeleer. Die appèl proses neem in aanvang so dra uitspraak deur die owerheid gelewer is.

Gedurende die hele proses, is daar drie weke na elke fase gegun vir kommentaar.

Die vereistes van die OIV fase sal toegelig word deur die bevindings van die Omvangsbepaling Verslag. Die Studieplan vir die OIV sal in die Omvangsbepaling Verslag ingesluit word en sal beskikbaar wees vir openbare evalueering.

Sleutel rolspelers en belanghebbendes reeds ge-identifiseer is die volgende:

- ▶ Grondeienaars,
 - Patryfontein;
 - Leeuwin;
 - Haelkraal;
 - Bartelsfontein;
 - Harterus;
 - Buffelskloof;
 - Zuurrug;
- ▶ Voëlvlei Boere Vereniging;
- ▶ Raadslede;
- ▶ Munisipale Beplannings Departement;
- ▶ Munisipale Eletriese Departement;
- ▶ Mossel Bay Environmental Partnership;
- ▶ WESSA, Suid Kaap;
- ▶ Earthlife Africa;
- ▶ Cape Nature;
- ▶ Energie Navorsings Raad;
- ▶ Telkom;
- ▶ Departement van Handel en Nywerheid;
- ▶ Departement of Minerale en Energie;
- ▶ Burgerlugvaart;
- ▶ Spoomet; en
- ▶ Nasionale Energie Reguleerder.

Hierdie is 'n voorlopige lys en enige ander belanghebbendes wat nie ge-identifiseer is nie kan steeds gelys word.



Hoe om betrokke te raak

U is ge-identifiseer as 'n belanghebbende, deur u moontlike belangstelling in die projek, deur die openbare konsultasie proses of as gevolg van terugvoer op die advertensies in die pers. Indien u enige navrae of voorbehoude het aangaande die voorgestelde projek, voltooi die Terugvoer Vorm en stuur terug aan Ninham Shand deur dit te faks of deur die meegaande koevert te gebruik. In die toekoms sal alle korrespondensie aangaande die projek net aan geregistreerde belanghebbendes verprei word.

Let daarop dat registrasie ook elektronies gedoen kan word by www.eskom.co.za/EIA, waar alle voltooide verslae ook beskikbaar sal wees.

Indien u enige navrae het, kontak asseblief:

Kamal Govender

Tel: (021) 481 2510 Faks: (021) 424 5588
kamal.govender@shands.co.za

Brett Lawson

Tel: (021) 481 2505 Faks: (021) 424 5588
brett.lawson@shands.co.za

Ninham Shand
Posbus 1347
Kaapstad
8000



ANNEXURE 5: COPIES OF COMMENTS RECEIVED



NINHAM SHAND
CONSULTING SERVICES

**PROPOSED OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION & TRANSMISSION LINES:
MOSSEL BAY**

Response Form for comment by Interested and Affected Parties

Please provide any comments you may have regarding the proposed project and return this page to Ninham Shand via email, fax or post:

Attention: Kamal Govender or Brett Lawson

Tel No: (021) 481 2510/2505 Fax No: (021) 424 5588 Email: enviro@shands.co.za
Postal Address: P.O. Box 1347, Cape Town, 8000

Please note that your comments must reach us by **Thursday, 23 June 2005.**

YOUR NAME: CHRISTIAAN
ORGANISATION (If applicable): OCTOBER TRADINGS
POSTAL ADDRESS: 41 ROMAN STREET
..... EXT 13 MOSSEL BAY CODE: 6501
PHONE NUMBER: 0721230689 FAX NUMBER:

List any other Interested and Affected Parties that should be contacted (with contact details if available):

| Name/ Organisation | Postal Address | Tel No. | Fax No. |
|--------------------|---------------------|-------------|---------|
| OCTOBER TRADINGS | 41 ROMAN STREET EXT | 30721230689 | |
| | | | |
| | | | |

PLEASE LIST ANY COMMENTS, ISSUES OR CONCERNS WHICH YOU MAY HAVE:

Gas turbine power plant & fuel supply pipeline:
EK HET BEEN BESWARE TEEN DIE
POWER LINE ME. SOLANG DIE MENSE VAN
MOSSELBAAI KAN BETREK WORD. SAL DAAR
Transmission lines & substation: GEEN PROBLEME WEES NIE
.....
.....
.....

Thank you for your interest





NINHAM SHAND
CONSULTING SERVICES

**PROPOSED OPEN CYCLE GAS TURBINE POWER PLANT, FUEL
SUPPLY PIPELINE, SUBSTATION & TRANSMISSION LINES:
MOSSEL BAY**

Response Form for comment by Interested and Affected Parties

Please provide any comments you may have regarding the proposed project and return this page to Ninham Shand via email, fax or post:

Attention: Kamal Govender or Brett Lawson

Tel No: (021) 481 2510/2505 Fax No: (021) 424 5588 Email: enviro@shands.co.za
Postal Address: P.O. Box 1347, Cape Town, 8000

Please note that your comments must reach us by **Thursday, 23 June 2005.**

YOUR NAME: LESTER JANSEN (MR)
ORGANISATION (If applicable): SIYAGALA (BER) BUSINESS FORUM
POSTAL ADDRESS: P.O. Box 529 Mossel Bay
044-6951529 CODE: 6500
PHONE NUMBER: 0736859504 FAX NUMBER: 044-6952689

List any other Interested and Affected Parties that should be contacted (with contact details if available):

| Name/ Organisation | Postal Address | Tel No. | Fax No. |
|--------------------|----------------|---------|---------|
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PLEASE LIST ANY COMMENTS, ISSUES OR CONCERNS WHICH YOU MAY HAVE:

Gas turbine power plant & fuel supply pipeline: DETERMINE THE
APPROXIMATE CONSTRUCTION LEAD TIME & REMEDIATION
OPPORTUNITIES DURING CONSTRUCTION PHASE. A.W.A
CONTRACTING OPPORTUNITIES I.T.O. BEE ACT & P.P.P.F. ACT
Transmission lines & substation:
WILL THERE BE FUTURE ELECTRICITY INCENTIVES
FOR INVESTORS IN COLLABORATION WITH LOCAL
AUTHORITY & PROVINCIAL GOVERNMENT?

Thank you for your interest

Received on 20/04/05



NINHAM SHAND
CONSULTING SERVICES

**PROPOSED OPEN CYCLE GAS TURBINE POWER PLANT, FUEL
SUPPLY PIPELINE, SUBSTATION & TRANSMISSION LINES:
MOSSEL BAY**

Response Form for comment by Interested and Affected Parties

Please provide any comments you may have regarding the proposed project and return this page to Ninham Shand via email, fax or post:

Attention: Kamal Govender or Brett Lawson

Tel No: (021) 481 2510/2505 Fax No: (021) 424 5588 Email: enviro@shands.co.za

Postal Address: P.O. Box 1347, Cape Town, 8000

Please note that your comments must reach us by **Wednesday 18 May 2005**.

YOUR NAME: Olivia Andrews
ORGANISATION (If applicable): Earthlife Africa
POSTAL ADDRESS: P.O. Box 176
Observatory CODE: 7935
PHONE NUMBER: 021 4474912 FAX NUMBER: 021 4474912

List any other Interested and Affected Parties that should be contacted (with contact details if available):

| Name/ Organisation | Postal Address | Tel No. | Fax No |
|--------------------|----------------|---------|--------|
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PLEASE LIST ANY COMMENTS, ISSUES OR CONCERNS WHICH YOU MAY HAVE:

Gas turbine power plant & fuel supply pipeline: What level / amount of carbon emissions is the plant expected to produce. Will there be limits imposed and will it be continuously regulated? What is the life expectancy of the plant
Transmission lines & substation and are there any rehabilitation of the area rules imposed? Are there any guidelines for employing the local communities surrounding the area?

Thank you for your interest



NINHAM SHAND
CONSULTING SERVICES

PROPOSED OPEN CYCLE GAS TURBINE POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION & TRANSMISSION LINES: MOSSEL BAY

Response Form for comment by Interested and Affected Parties

Please provide any comments you may have regarding the proposed project and return this page to Ninham Shand via email, fax or post:

Attention: Kamal Govender or Brett Lawson

Tel No: (021) 481 2510/2505 Fax No: (021) 424 5588 Email: enviro@shands.co.za

Postal Address: P.O. Box 1347, Cape Town, 8000

Please note that your comments must reach us by **Thursday, 23 June 2005.**

YOUR NAME: MR MONDE MPUMELA DEPUTY PRESIDENT
 ORGANISATION (If applicable): SIYA QALA BEE BUSINESS FORUM
 POSTAL ADDRESS: P.O. BOX 2244
MOSSEL BAY CODE: 6500
 PHONE NUMBER: 044-6951529 FAX NUMBER: 044 - 6952689

List any other Interested and Affected Parties that should be contacted (with contact details if available):

| Name/ Organisation | Postal Address | Tel No. | Fax No. |
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PLEASE LIST ANY COMMENTS, ISSUES OR CONCERNS WHICH YOU MAY HAVE:

Gas turbine power plant & fuel supply pipeline: ECONOMIC IMPACT BENEFITS TO THE LOCAL COMMUNITY (e.g. S.M.M.E.'s / BEE PARTICIPATION PRE-CONSTRUCTION AND AFTER CONSTRUCTION CLARIFY PREFERENCE TO LOCALS)
 Transmission lines & substation: SOCIAL IMPACT SHOULD DETERMINE THE SOCIAL BENEFITS LINKED TO JOB CREATION, AND TRAINING AND SKILLS TRANSFER CATEGORY OF POSITIONS TO BE FILLED BY LOCALS. SKILLS AUDIT MUST BE UNDER TAKEN.

Thank you for your interest

021 7615983



**BOTANICAL SOCIETY OF SOUTH AFRICA
CONSERVATION UNIT**

PRIVATE BAG X 10, CLAREMONT 7735
PHONES: 021-797-2284, FAX 021-761-5983
EMAIL: Devilliersc@nbi.ac.za

TO: KAMAL GOVENDER FROM: CHARL DE VILLIERS
 FAX NUMBER: 424 5588 DATE: 20-06-05
 COMPANY: NINHAMI SHARD TOTAL NO. OF PAGES: 5
 PHONE NUMBER: 481 2400 SENDER'S REFERENCE NUMBER:

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The Botanical Society
of South Africa



Die Botaniese Vereniging
van Suid-Afrika



Conservation Unit

Private Bag X10, Claremont, 7735
Tel: 027-21-797-2284 Fax: 027-21-761-5983 Email: paisley@nbi.ac.za

20 June 2005

Ninham Shand Consulting Services
81 Church Street
CAPE TOWN
8000

Attention: Mr Kamal Govender
kamal.govender@shands.co.za

Fax: (021) 424 5588, 4 pp

Dear Sir

**Comment on Draft Scoping Report:
Proposed Eskom Open Cycle Gas Turbine (OCGT) Power Plant, fuel supply pipeline,
substation and transmission lines at Mossel Bay**

Thank you for providing the Botanical Society of SA Conservation Unit with the opportunity to participate in this environmental process.

The "Issues' Trail", Chapter 3, "The Affected Environment", and Chapter 6, "Scoped Issues", of the aforementioned Draft Scoping Report refer.

1. Issues' Trail

Our comments of 21 April 2005 generally have been adequately captured in the Issues' Trail, but one aspect should be clarified in the Final Scoping Report, viz:

References to strategic plans and policies

We recommended that project planning "should seek to promote functional connectivity and

Advisory Committee: Ms Thérèse Brinkcote, Ms Susie Brownie, Mr Tony Dold, Dr Peter Goodman, Ms Kristal Maze, Mr Warrick Stewart



021 7615983

reduce fragmentation of habitat by restorative actions". This is noted in your response, which then goes on to state that "strategic plans and policies already exist and fall outside the scope of this EIA process".

What "strategic plans and policies" are you referring to, and why would they "fall outside the scope" of this EIA process?

Our letter of 24 April 2005 made explicit reference to the Sub-tropical Thicket Ecosystem Planning Project, the STEP Megaconservancy Network and the Gouritz Initiative.

In order to ensure informed and defensible decision-making, it is essential that these spatial biodiversity informants be prominently recognised as key conceptual, policy and planning informants in this environmental process. See references below.

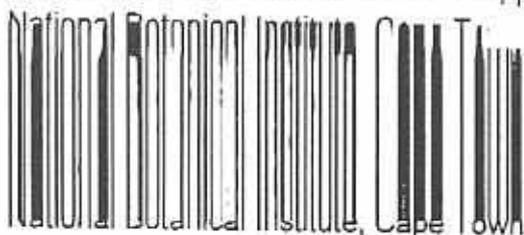
2. The Affected Environment

Flora

This section should be rewritten to reflect the best current understanding of terrestrial biodiversity pattern and process in the Gouritz-Mossel Bay region, threats to its persistence, and strategies and plans for its conservation.

As a point of departure, we recommend that this section be based on:

- Cowling RM, Lombard AT, Rouget M, Kerley GIH, Wolf T, Sims-Castley R, Knight A, Vlok JHJ, Pierce SM, Boshoff AF and Wilson SL (2003) *A conservation assessment for the Subtropical Thicket Biome*. TERU Report 43. Terrestrial Ecology Research Unit, University of Port Elizabeth, Port Elizabeth.
- Driver A, Maze K, Lombard AT, Nel J, Rouget, M, Turpie JK, Cowling RM, Desmet P, Goodman P, Harris J, Jonas Z, Reyers B, Sink K & Strauss T (2004) *South African National Spatial Biodiversity Assessment 2004: Summary Report and Appendices*. SA National Biodiversity Institute, Kirstenbosch.
- Knight AT and Cowling RM (2003) *The Megaconservancy Network Concept: Keeping people on the land in living landscapes*. TERU Report 45. Terrestrial Ecology Research Unit, University of Port Elizabeth, Port Elizabeth.
- Lombard and Wolf cc (2004) *Gouritz Initiative – Final Report*. Prepared by GIS Specialist Services for Western Cape Nature Conservation Board, George.
- Mucina L and Rutherford MC (eds) (2004) *Vegetation Map of South Africa, Lesotho and Swaziland*. Shapefiles of basic "mapping units". Beta Version 4.0, February 2004.



Pierce, SM (2003a) The STEP Handbook: Integrating the natural environment into land use decisions at the municipal level: towards sustainable development. Terrestrial Ecology

Research Unit Report No. 47. University of Port Elizabeth, South Africa.

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Pierce, SM (2003b) The STEP Mapbook, part of the STEP Handbook: Integrating the natural environment into land use decisions at the municipal level: towards sustainable development. Terrestrial Ecology Research Unit Report No. 47. University of Port Elizabeth, South Africa.

Vlok, JHJ and Euston-Brown DIW (2002) The patterns within, and the ecological processes that sustain, the subtropical thicket vegetation in the planning domain for the Subtropical Thicket Ecosystem Planning (STEP) project. Terrestrial Ecology Research Unit, University of Pretoria, Report No 40. UPE, Port Elizabeth.

These reports also represent highly relevant project informants in terms of the strategic planning and policy framework for this project.

Particular attention should be paid to describing:

- The type and status of threatened vegetation (cf. Vlok and Euston-Brown 2002, Pierce 2003b, Mucina and Rutherford 2004 and Driver et al. 2004) within the broad vicinity of the proposed project (e.g. the transects Harbertsdale-Blinderiviermond, Gouritz River N2 bridge-Mossel Bay);
- The ecological processes (e.g. fire and seasonal migration of nectarivores) that maintain these ecosystems (Vlok and Euston-Brown 2002, Lombard and Wolf 2004); and
- Identifying locally-extant habitats that would represent the spatial surrogates – corridors, boundaries or gradients – for these ecological processes (Cowling et al. 2003, Pierce 2003b, Lombard and Wolf 2004).

3. Scoped Issues

In their current form, the proposed terms of reference for the biodiversity assessment are inadequate.

In particular, they should emphasise the identification, assessment and evaluation of potential impacts of the various project alternatives (particularly the respective powerline routes) on the aforementioned structural and functional aspects of biodiversity.

The terms of reference for the biodiversity specialist investigations should explicitly refer to regional conservation priorities identified by the STEP project and Gouritz Initiative, and interrogate project-related impacts in terms of the threats and/or opportunities they present in terms of such conservation priorities.

It is recommended that the terms of reference for the biodiversity specialist studies be submitted to the CapeNature regional ecologist for comment prior to finalisation in the Plan of Study: EIA.

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Your attention is again drawn to the Recommended terms of reference for the consideration of biodiversity in environmental assessment and decision-making (BotSoc May 2005) which are also used by CapeNature's Land-use Advisory Unit.

Please contact the undersigned in the event of queries.

Yours sincerely,



CHARL DE VILLIERS

Project leader: Biodiversity in Environmental Assessment

Copied to:

Dr Bruce McKenzie, BotSoc
Dr Anne-Lise Schutte-Vlok

docbruce@mweb.co.za
scapeimu@mweb.co.za

INWONERSVERENIGING VAN DANABAAI BEWAREA
RESIDENTS ASSOCIATION OF DANA BAY CONSERVANCY



Telefoon: (044) 698 2015
 Telephone:

Posbus: 10654
 P O Box: Danabaai/Dana Bay
 6510

Navrae: G J Oberholster
 Enquiries:

Verw. Nr.
 Ref. No.

Datum: 10.06.2005
 Date: No. File: 4008570

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NINHAM SHAND RAADGEWENDE DIENSTE
 Posbus 1347
 Kaapstad, 8000

Vir aandag: Kamal Govender,

is. Voorgestelde Opsiklusgasturbine Kragstasie by Mosselbaai
Agtergrond.

Danabaai is 'n woongebied wat wes van Mosselbaai se middeoord geleë is maar in 'n oostelike rigting van die PetroSA aanleg. Met die uitleg van Danabaai is 2000 erwe uitgelê en tans is +/- 1500 bebou. Die permanente inwonertal is +/- 2000 persone.

Die naaste punt (westelike sy) van Danabaai na waar afgedraai word vanaf die N2 na PetroSA (Mosselbai-aanleg) is ongeveer 2,8km. Indien die wind in die suidoostelike rigting waai, ondervind ons die stank wat van die skoorstene ontsnap. (Op 3 Junie was daar weer so 'n geval). Die dreuning van die aanleg kan ook gereeld as agtergrond geraas waargeneem word.

Ander woongebiede wat aan dieselfde uitlaatgasse en geraas blootgestel word, sluit in:

- (a) Kwanonqaba : Dit is 'n laekostebehuisings gebied wat +/- 5,5km vanaf die bogenoemde afdraai na die aanleg begin. In die jongste fase is 2700 huise gebou; hulle sluit aan by 'n gedeelte wat al voorheen gebou is. Getal inwoners is onbekend. Kwanonqaba lê oos van die PetroSA aanleg.
- (b) Aangrensend aan Danabaai (in 'n suid-suidwestelike rigting) is nog drie gebiede wat tans ontwikkel word, nl. Moquini, Fishermans Village en Blue Horison. Laasgenoemde het 105 woonpersele, terwyl eersgenoemde twee se getalle onbekend is.
- (c) Aangrensend aan Danabaai, maar aan die oostelike kant, word tans erwe verkoop vir 'n nuwe ontwikkeling, genoem Paradise Coast. 'n Getal erwe van 1200 is ter sprake.
- (d) Suid van die PetroSA aanleg, maar nie aangrensend aan Danabaai nie, word huise in die eerste fase van 'n drie fase ontwikkeling te Nautilus Bay gebou.

Die huidige PetroSA-aanleg het al 'n impak op 'n groot getal mense se lewens en met die bou van die beplande Oopsiklusgas turbine (OSGT) – kragstasie sal die nadelige impak daarvan aansienlik vergroot word.

Kommentaar

1. Eskom se hoëvlak besluit om 'n oopsiklusgas turbine (OSGT) kragstasie op die PetroSA terrein naby Mosselbaai, wat binne 'n paar kilometer van verskeie woongebiede, (insluitende Danabaai) geleë is, op te rig is sonder enige publieke deelname geneem. Die huidige impakstudie en proses het dus geen of baie min waarde omdat die inwoners alreeds gekonfronteer word met die realiteit dat die ligging van die kragstasie vasgestel is. In die lig van Eskom se gebrek aan konsultasie en die organisasie se aangekondigde R90 biljoen uitbreidingsplanne bestaan die vrees ook dat die oprigting van die OSGT-kragstasie in die toekoms gevolg sal word deur verdere uitbreidings insluitende kernkragentrales op die terrein.

Daar is geen voordele spesifiek vir die inwoners van Mosselbaai met die oprigting van hierdie kragstasie nie. Die totale elektrisiteitsverbruik van Mosselbaai beloop minder as 3% van die beoogde kragstasiekapasiteit. Die kragvoorsiening is dus vir *ander streke bedoel wat die voordeel daaruit sal put, terwyl Mosselbaai en die omringende gemeenskappe met die groot negatiewe impakte en risikos wat met die kragstasie gepaard sal gaan, moet saamleef*. Aktiwiteite wat groei in Mosselbaai en die omliggende gebiede bevorder, word deur toerisme en verwante bedrywe oorheers en die OSGT-kragstasie projek sal dus 'n negatiewe impak op die volhoubare ontwikkeling van die dorp en streek hê.

2. Die kragstasie benodig paraffien wat deur PetroSA voorsien sal word. Dit impliseer dat die bedryfslewe van die PetroSA-aanleg met van 20 tot 40 jaar verleng kan word. Meer as twintig jaar gelede was die aanvanklike Mossgas projek nie onderwerp aan 'n deeglike omgewingsimpakstudie nie en is ekosisteme en die inwoners van Mosselbaai gedwing om saam te leef met 'n hele reeks onaanvaarbare en negatiewe impakte. Die tekort aan gasbronne het die moontlikheid laat opvlam dat die PetroSA aanleg sy deure sou moes sluit. Die bedryf van die OSGT-kragstasie is totaal afhanklik van die voorsiening van groot volumes paraffien en die PetroSA-aanleg moet dus as 'n integrale deel van die projek beoordeel word. Dit is dus logies dat die omgewingsimpakstudie die infrastruktuur en bedrywe van die PetroSA-aanleg insluit.
3. As Inwonersvereniging is ons besorg dat ons lede se lewenskwaliteit en die natuur nadelig deur die beplande projek beïnvloed gaan word.

4. Twee aspekte wat ons insiens nie tot dusver in u ondersoek aangespreek is nie, maar wel deeglik aangespreek moet word, is:
- (a) Die invloed wat die kragstasie op TOERISME kan hê, en
 - (b) Die invloed wat die kragstasie op die markwaarde van naasliggende eiendomme sal hê.

T.o.v. (a) moet in gedagte gehou word dat Mosselbaai tot 'n baie groot mate as 'n toerisme attraksie bemark word. Daar is baie geld in toerisme belê. Ons insiens sal dit 'n baie negatiewe invloed uitoefen, want die bestaande raffinadery straal al reeds 'n negatiewe beeld uit. 'n Kragstasie aangrensend aan die raffinadery sal die beeld verder baie skade aandoen.

Die beste persoon om in die verband mee kontak te maak is Mev. J. Marais, Direkteur: Toerisme by die Mosselbaai Toerisme Buro. U kan haar kontak by tel. (044) 6912202: faks nr. (044) 6903077 of e-mail adres : mibt@mweb.co.za

T.o.v. (b) moet in gedagte gehou word dat die woongebiede wat die naaste aan die beoogde kragstasie geleë sal wees (dit sluit bestaande woongebiede/ woongebiede wat reeds in 'n ontwikkelingsfase is en nuwe woongebiede wat in die nabye toekoms ontwikkel gaan word maar waarvoor die grond reeds aangekoop is) almal ontwikkel was/ besig is om te ontwikkel voordat daar enige sprake was van die daarstelling van 'n kragstasie. Dit sou ons insiens 'n ander scenario gewees het as die kragstasie reeds daar was en die ontwikkelaars en kopers bewus was daarvan. Wie gaan verliese vergoed as die eiendomsmark drasties in hierdie gebiede sou val?

Hierdie aspekte moet ons insiens deeglik in oorweging geneem word voordat die posisie van die kragstasie finaal bepaal word. Ons insiens verleen dit steun aan ons argument dat die kragstasie by die Proteus-substasie opgerig word en dat die brandstof per pyplyn vervoer word ipv om die kragstasie by die PetroSA-aanleg te bou en die krag met kraglyne na die substasie te vervoer.

5. Die volgende voorstelle en/of versoeke word aan u gerig vir u gunstige oorweging;

Versoek 1

Heroorweeg die ligging van die beplande OSGT-kragstasie op die PetroSA terrein in Mosselbaai . Een voorstel sou wees om die kragsentrale te plaas in 'n omgewing waar groot kragverbruik plaasvind om sodoende ook verspreidingsverliese te beperk bv PE / Coega projek omgewing.

Indien 'n grootskaalse verskuiwing in die ligging van die OSGT-kragstasie nie haalbaar is nie, stel ons voor dat 'n terrein in die omgewing van die bestaande Proteus Substasie vir die doel ondersoek word. Dit sal 'n verlenging van die brandstoftoevoerpyflyn vanaf PetroSA benodig maar die twee 10km lange 400kV transmissielyste sal uitgeskakel word.

Versoek 2

Die infrastruktuur en aktiwiteite van hierdie PetroSA-aanleg is 'n integrale deel van die kragstasieprojek en die impakstudie moet dus verbreed word om die organisasie in te sluit.

Versoek 3

In die lig van die verwagte negatiewe impakte wat met die OSGT-kragstasie en gepaardgaande aktiwiteite verband hou, versoek die Inwonersvereniging dat daar onder meer besondere aandag aan die volgende aspekte verleen word:

- *'n Studie om te bepaal wat die besoedeling en ekologiese risiko's is wat PetroSA se tenkplaas, pyplyn(e), hawe-aktiwiteite en uitvalpyplyn na die see inhou en hoe dit vergelyk met die beste internasionale praktyke. Gebaseer op die bevindings en aanbevelings van dié studie moet die daarstelling van 'n omgewingsbestuursplan in konsultasie met die geaffekteerde inwoners opgestel word.*
- *Die gebruik van die beste gasturbine tegnologie om gasuitlate soos stikstof, koolstof, onverbrande koolwaterstowwe en veral ook geraas te beperk. (Die sogenaamde "Dry Low Emissions" turbines). Versekering dat die konsentrasie van uitlaatgasse aan die strengste internasionale vereistes sal voldoen.*
- *'n Onderneming dat die maksimum geraasvlakke binne 'n radius van 1500m van die aanleg, nie die strengste vereistes vir woongebiede met feitlik geen agtergrondgeraas sal oorskry nie.*
- *Die daarstelling van 'n impakstudie en bestuursplan vir die konstruksiefase van die projek in konsultasie met die geaffekteerde partye wat insluit individue en organisasies bv Die Inwonersvereniging van Danabaai Bewarea.*
- *Die opstel van 'n oorhoofse omgewingsbestuursplan vir die bedryf van die kragstasie (insluitende die Mosselbaai PetroSA-aanleg) in samewerking met die geaffekteerde partye.*

Daar word vertrou dat u gunstig op die voorstelle/versoeke sal reageer.

Vriendelik die uwe,



G J Oberholster
Voorsitter: Inwoners-en Sakekomitee

NS - Afskrif van hierdie dokument is ook aan die Departement van Omgewingsake en Ontwikkelingsbeplanning vir hulle insae en/of moontlike gebruik.

SIYA QALA (BEE) BUSINESS FORUM

SIYA
QALA
L
A

P.O. Box 529
MOSEL BAY
6500



PetroSA

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No. 3 Sioux Street Voorbaai, Mossel Bay

27 JUNE 2005

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NINHAM SEAND
P.O. BOX 1347
CAPE TOWN
8000

Attention: Kamal Govender or Brett Lawson

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

1) EMPLOYMENT AND SKILLS DEVELOPMENT

1. (A) Social impacts assessment must determine the social benefits linked to job creation, training and skills transfer.

(B) In terms of job creation, there needs to be co-ordination with the economic impact study, particularly in terms of the number and category of positions that will be filled by locals. In this regard the following will apply:

- i) Skills audit must be undertaken in order to determine the availability of skills required for the project. This information must be used to determine the level of local employment that can be achieved in all phases of the project. This will also assist developers to access a database with the skills of the local people. (Which is available at the Mossel Bay Municipality LED Unit) Manager Mr. Mouwabisi Luxande (Local Labour Forum)
- ii) Consideration should be given to applying Labour intensive construction practices in such a way as not to negatively influence the construction, time frames for the project. Proposals in this regard also need to be addressed in the social impact assessment.

1. (B) The Social impact assessment must include recommendations in respect of the recruitment strategy, to include the following:

- i) A "Local first" policy to maximize employment opportunities for the local communities taking into account of the local skills base and the existing legislation and policies on professional procurement.
- ii) The communication strategy to be employed that will, clarify that preference be given to locals.
- iii) The procedures to be followed by aspiring applicants and employers e.g. procedures for advertising jobs, procedures for applying, procedures for notifying successful or unsuccessful applicants etc.

1. (C) The social impact assessment must describe the training and skills development proposals associated with the project for pre-construction, construction and operational phases of a development. This description must include the following:

- i) The number of people, to be trained;
- ii) The status of the training (i.e. accredited or not);
- iii) The qualifications that will be obtained.

1. (D) The Social Impact Assessment must include recommendations regarding support in assisting employees to access employment opportunities after construction is complete (i.e. for temporary employees) through for example, liaison with local business organizations and community organizations.

1. (E) Procurement requirements (i.e. services that will be "brought in") must be provided together with an analysis of whether these are available in the local area. The preferred areas or locations from which the developer intends to procure services will be procured must be defined. Specific attention must be paid to the potential to procure goods and services from SMME'S particularly those owned by HDT'S and woman.

2. ECONOMIC IMPACTS

2. (A) A complete economic impact assessment of the proposed development will be required, including information on job creation, procurement, multipliers, business modules, based on at least a Ten Year horizon. An economic model must be based on primary research in the Western Cape and should quantify the direct employment and revenue that will be created by the various components of a proposed (OCGT) power plant development.

2. (B) The projection of economic benefits to local communities should be based on local economic research and conditions, not only national economic statistics.

2. (C) Where economic benefits to communities are the sole or major motivating factor for the (OCGT) Power plant development, all relevant economic modeling information must be provided in an accessible form.
2. (D) The basis on which job creation projections are made must be provided
2. (E) Job creation must be determined and reported per component of the (OCGT) Power plant development. This must include data on permanent and temporary jobs and on the number of jobs per category (Artisans, skilled, semi-skilled, and unskilled.)
2. (F) The estimated rand value per service that will be procured from the local area must be provided.
2. (G) The model or approach to be applied to facilitate Broad Based Black Economic Empowerment, with supporting information, must be provided in the Economic Impact Assessment. Supporting information must include signed commitments from these BEE partners or participants.
2. (H) All sustainable development design parameters that are stated as having been incorporated into the design of the (OCGT) Power plant development project must be included in the economic/financial feasibility study for the project.

Kind Regards

L. JANSEN
Secretary General

PP K.P. MAMASE
1


M. MPUMELA
Deputy President
Cell No: 083 962 7552

¹ President: Chief Michael Fadana, Deputy President: Monde Mpumela, Secretary General: Lester Jansen
Public Relations Officer: Temsie Mahlasela, Treasurer: Johannes Yantolo, Thozie Twala,
M.M. Bobelo, Noxolo Fadana, M. Yibe, Nolutando Fadana, S. Stimela, K.P. Mamase

Fax

To: Kamal Govender / Brett Lawson
Ninham Shand

From: Johan du Preez

Fax: 021 424 5588

Page 6

s:

Phon 021 481 2510

Date: 2005/06/23

e:

Re: Comments: Draft Scoping
Report
OCGT Power Plant at Mossel
Bay

Dear Brett / Kamal,

I've attached my comments on the Draft Scoping Report for your attention.

Yours faithfully,


Johan du Preez

Proposed Open Cycle Gas Turbine Power Plant, Fuel Supply Pipeline, Substation and Transmission Lines at Mossel Bay

Comments on Draft Scoping Report

1. Corporate Governance

The two open cycle gas turbine plants (OCGT's) planned for the Western Cape signals the start of the greenfield project stage of a more than R90 billion Eskom capital expenditure programme. In Eskom's case, and as far as the impact assessment process is concerned, the state effectively plays the concurrent roles of legislator, developer, judge and policeman. It is for this reason that Parliament, through the minister responsible for Department of Public Enterprises called for Eskom to subscribe to the highest possible corporate governance standards.

Mr. Thulani Gcabashe, Chief Executive, Eskom Holdings, publically responded to this request by placing a full page advertisement in the Sunday Times dated 1 May 2005. It is clear from the advertisement that the CEO and Eskom accepted the challenge and that the adopted corporate governance model is benchmarked globally.

Eskom's approach to the environmental impact assessments of the first two greenfield projects of this massive expansion programme is bound to set the tone for the rest of the work to be done. It is for this reason that the quality of the impact assessment process for the two OCGT power plants should be beyond reproach.

2. Site Selection Process

I believe that the in-house environmental screening process followed by Eskom is fatally flawed and that, at best, it can be described as a "justification process" following an internal edict that the site for the OCGT plant will be located at PetroSA.

As far as this project and the associated environmental impact process is concerned the site selection process, by far, is considered to be the most important exercise. The superficial approach followed in the site selection process, therefore, is unacceptable and does not comply with the good corporate governance model adopted by the government and Eskom. It is inconceivable how the environmental team and DEAT could have approved the findings of such a flawed study.

More specific comments on the "screening and a fatal flaw analysis of the Mossel Bay siting options" include:

2.1 Environmental Constraints

- The author of the report states that "specific information for the Mossel Bay area could not be easily sourced thus the analysis is based primarily on the findings of the site visit" – this statement is an excellent example of the superficial approach followed in the screening study.
- Socio-economic environment: Fishing and PetroSA (the latter it is stated provides employment to 1000 people) are considered to be "the major role-

players in the development of the port area". "PetroSA is also an important local and national contributor to the economy..." etc.

The fact is that PetroSA is a very small and minor contributor to the local and national economy. The key socio-economic activities, involving the majority of the 70 000 residents, such as real estate development, building construction, domestic and international tourism based on Mossel Bay's beautiful scenery and "sense of place" as the gateway to the Garden Route is not even mentioned in the screening study.

- Although the PetroSA site is located well within the municipal boundaries the site screening exercise did not include for consultation with, or for that matter consideration of, the thousands of residents located within a few kilometers of the site in Kwanonqaba, Dana Bay, Heiderand, Moquini, Fishermans Village, Blue Horison, Heiderand, Paradise Coast etc. In addition no cognisance was taken of the spatial development framework of the Town Council of Mossel Bay that indicate future residential growth nodes towards the PetroSA site.

2.2 Environmental Impacts

- Throughout the screening study the PetroSA site is generally described as a highly visible noisy industrial site and this argument is used to motivate the area for the location of the OCGT plant eg. "The PetroSA site is visually prominent to traffic passing on the N2 and the surrounding farmers. The location of an OCGT within the boundaries of the PetroSA site, next to the landfill site, is not expected to have any significant visual impacts in the area. This is due to the fact that the OCGT plant would blend in with the rest of the refinery equipment. The ambient noise and air quality levels are currently quite high as a result of the various processes occurring on the site and the OCGT is not expected to substantially contribute to these levels."

Based on these untested assumptions and without any consideration to the thousands of residents located within a couple of kilometers of the site the significance of all the negative impacts are considered to be regional and having a low significance. It is clear that the impacts of the OCGT power plant with it's four monstrous turbines, 30 to 60m high cooling towers, twin 30 to 40m high transmission lines and polluted air emission rates would dominate most of the impacts associated with this site. It is therefore my considered opinion that the negative physical impacts associated with this site should all be rated local with a high significance. As Mossel Bay is considered to be the gateway to the Garden Route the sense of place category should be rated local and regional with a high significance.

- As far as the Proteus Substation site is concerned, however, the screening study emphasises the unique vegetation eg. "The substation site is surrounded by relatively undisturbed natural vegetation and these exhibit fairly high levels of species diversity and endemism" and the sense of place eg. "The development of an OCGT power station at the Proteus substation is expected to substantially affect the sense of place in that the area is largely undeveloped."

Contrary to the site screening assessment performed even the most cursory visit to the Proteus substation indicate the following:

- The vegetation mentioned is confined to a narrow strip between the southernmost fence of the substation and the R327 and somewhat to the west of the facility. The vegetation surrounding the rest of the substation is of no significance.
 - Several huge, 30 to 40m high, very visually intrusive transmission lines cross the countryside before entering and exiting the large substation with its huge transformers and other equipment. The sense of place is that of a heavily industrialised area.
 - Only a few people will be affected by an OCGT plant located at the Proteus site.
- Apart from the abovementioned considerations the comparative assessment exercise conducted to determine the most suitable site is seriously flawed. A PetroSA site requires two 400kV, 12km long, 30 to 40m high transmission lines to the substation whereas a Proteus site will negate the need for power transmission but would probably require two pipelines (water and kerosene) at ground level. The comparative environmental impacts (or footprints) of these two options have been omitted and should have been included in the site selection process.

A 10m wide corridor for the pipelines at ground level will result in a relatively environmentally friendly footprint compared to the huge visual and other impacts associated with two 30 to 40m high, 400kV transmission lines each requiring a 55m servitude positioned 400m from one another. This very significant consideration was not included in the comparative assessment used in the site selection process. The switch to pipes instead of transmission lines would also generate considerable project savings.

It is clear that should all the abovementioned issues be factored into the comparative assessment exercise the preferred site for the OCGT power plant would be located at the Proteus substation.

2.3 Sustainable Development

The driving force for the economic element of the sustainable development model of the Garden Route is based on domestic and international tourism that, in turn, is based on the scenic beauty of the region. Mossel Bay is considered to be the southern gateway to this region.

Heavy industrial development such as the establishment of an OCGT power plant is not aligned with the sustainable development model of Mossel Bay. The establishment of PetroSA about 20 yrs ago was a huge mistake and took place without the benefit of an environmental impact assessment process. PetroSA's operations should therefore not be used as an argument to perpetuate a legacy of poor decisions with the establishment of the OCGT power plant on the site.

2.4 Catastrophic Risks

Given the hazardous nature of the operations at PetroSA and the OCGT power plant, a shared site will increase the risks associated with the occurrence of catastrophic events. The EIA should include for an assessment of these risks.

2.5 Recommendations

It is clear that the in-house site screening process conducted by Eskom is seriously flawed. The fact that it has been approved by DEAT is alarming. If this is an example of the corporate governance standards applied by the state in its multi-faceted role of legislator, developer, judge and policeman the general public can consider environmental impact assessment processes to be a waste of time.

I therefore recommend that the decision to site the OCGT power plant at PetroSA be reconsidered.

3. Scope of EIA

The scope of the EIA does not include for the potential impacts associated with the sourcing of millions of kiloliters fuel and possibly water. Sound practice requires that, apart from the actual facility, both the "upstream" and "downstream" activities of a development be considered in the impact assessment. The fact that PetroSA will be providing the fuel is not a valid excuse to avoid the responsibility to consider the impacts caused.

PetroSA will have to make major process changes to its product mix in order to accommodate the need of the OCGT power plant for millions of kiloliters of kerosene per year. From a legal point of view significant changes in processes and/or operational activities are subject to an environmental impact assessment. It is therefore recommended that the current impact assessment process be broadened to capture the impacts caused by the change in operating activities at PetroSA to produce the kerosene.

4. Finalisation of OCGT Plant Size and Operating Parameters.

It is an important requirement for the impact assessment process to be meaningful that the size and operating parameters of the plant be finalized. At this stage the capacity of the plant is rated at anything between 450 MW (site screening report) and 1000 MW. As there is a direct correlation between the number of turbines, hours of operation per day and impacts caused, it is absolutely essential that the variables be fixed for the assessment stage. The parameters decided on should be used for the impact assessment and thereafter be included in the operating manual of the plant.

As Eskom would be wasting money if the full capacity of the plant were not utilised it is recommended that all assessments be based on the maximum operating capacity of the turbines.

5. Key Impacts

The following comments are made with respect to the expected key impacts:

5.1 Noise

Ensure that the best available turbine technology and sound dampening methodologies are used to prevent any increase in noise levels at a distance of 1.5km from the plant.

5.2 Air Pollution

- Use the best available technology, the dry low emissions turbines, to limit nitrogen oxide emissions as the massive quantities of water required for conventional turbine technology would place undue stress on the water resources of the region. Water emanating from an air pollution control plant will also have to be treated.
- It is incorrect to fix the height of the towers at 30m before the dispersion modeling exercise has been completed. The site screening exercise refers to towers that are 40 to 60m high – these heights seem more realistic.

5.3 Visual

The visual impact of a plant located at PetroSA would have a very significant negative impact on tourism the key driver for the sustainable development of Mossel Bay. The team is therefore urged to relocate the plant to the Proteus substation site.

6. Closing Comments

The site screening and selection process conducted by Eskom for the location of the OCGT power plant is unacceptable and fatally flawed. It does not comply with good practice and the corporate governance standards required by parliament. It is therefore recommended that the OCGT plant be located on the Proteus substation site.

The impacts associated with the operational and/or process changes required at PetroSA to provide the massive volumes of kerosene required for turbine operation should be included in the impact assessment study.



Johan du Preez

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Tel: 082 459 1054

Western Cape Region

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WILDLIFE AND ENVIRONMENT SOCIETY OF SA
People caring for the Earth

24 June 2005

Kamal Govender
 Ninham Shand
 PO box 1347
 Cape Town
 8000

By email: enviro@shands.co.za

and Fax: 424 5588

Dear Kamal

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Comments on the Draft Scoping Report for the Proposed Mossel Bay Open Cycle Gas Turbine Power Plant and Associated Infrastructure.

Thank you for the opportunity to comment on the above document.

Alternatives

With regards to considering alternatives, the Western Cape Region of the Wildlife and Environment Society of South Africa is concerned that perhaps a wider range of alternatives should be considered in this EIA. While we acknowledge that alternative sites were assessed in earlier processes, according to the 'Scan Report' "specific sites were ...identified on the basis of land availability, access to fuel and transmission integration costs". Environmental issues only seem to have been a secondary consideration. We are of the opinion that environmental and health issues should be of primary, or at the very least equal concern, in identifying suitable sites and are therefore not convinced that this was a suitable means of addressing the issue of alternatives.

We do not support the dismissal of the "no-go" alternative. We imagine that if the proposal does not go ahead, Eskom will find another solution, be it finding another site for the OCGT (site alternatives) or implementing management interventions (e.g. reducing electricity exports) (management alternatives).

We trust that a full range of technology alternatives will be assessed in the EIA to ensure the most environmentally sound solution is found.

Scenario Assessment

We request that a range of operating scenarios is considered in the EIA. This should include worst-case/ disasters, technology failure, full-time operation, 8 hour operation and peak operation.

We also understand that the facility can operate using different fuels, including diesel oil. The impacts of using alternative fuels should therefore also be considered in the EIA.

Visual Impact

We are pleased to note that a visual impact will be undertaken, and that this will include consideration from a tourism perspective. One concern is that there seems to be inconsistency with regards to the height of the stacks. The 'Scan Report' refers to the stacks being 40-60 meters high, while the draft

Scoping Report states that the stacks will be only 30 meters high. This would also have implications in terms of air quality and needs to be clarified.

Air quality

Global warming is a reality and urgent action is needed. While we recognize the need for a transition period towards implementing 'greener' technology, WESSA/WC does not support the building of any new infrastructure that produces greenhouse gases and uses unrenewable resources. We recognise that this OCGT technology is apparently 'cleaner' than coal fired power stations, and we would be interested in a comparison of the emissions arising from these two processes, including greenhouse gasses. If this OCGT is in fact cleaner, would it be possible to operate it for longer periods and replace some of the energy (and impacts) that comes from coal powered sources?

Given the proximity to other sources of pollution (the PetroSA Refinery), it will not be sufficient to ensure that the emissions meet certain air (and noise) quality standards. The cumulative impacts must be assessed in the EIA.

Heat

The proposed station will apparently emit a significant amount of heat. The impacts of this on the local climate needs to be assessed.

Water

It seems that a large amount of water is required for this proposed development. The source of water and its impacts must be considered. Would it be possible to use waste-water in some of the processes that demand water? It is apparent that water needs to be de-mineralised for use in certain processes. What methods will be used? How much energy is needed for this process? The disposal of the resulting waste needs to be addressed in the EIA report.

Waste

The draft Scoping Report states that effluent and wastes will be disposed of 'appropriately'. We would appreciate more detail than this and trust it will be dealt with in the EIR. We request that the EIA specifies what exactly will be produced, how much, how it will be disposed of, and what the impacts of this will be. Alternative methods of managing this waste must be explored. For example, can the waste be used by any other industries?

Hazardous substances, health and safety

There are clearly safety and health issues for the nearby communities. It seems that in addition to large volumes of kerosene, acid and caustic substances will be stored on site. Issues with respect to health and safety (beyond impacts of emissions) must therefore be addressed, including risk of soil and groundwater contamination, emergencies and accidents. Will there be an evacuation plan?

Indirect and Cumulative Impacts

There are potentially many indirect and cumulative impacts of the proposed facility. Although we do not expect them all to be assessed in detail in this EIA, there are some questions and issues that need to be raised, and born in mind throughout process. For example, the cumulative impact on climate change and air quality has been noted earlier. The source of technology and building materials, and more importantly the source of fuel and its impacts, warrants consideration. Will the proposed development necessitate the upgrade of other facilities (e.g. transmission lines and substations)?

Sustainability/ life-span

We are concerned with the long-term sustainability of the project and we would be interested in an assessment of the financial feasibility entire project. Other questions include: What is the OCGT's expected life span? How long are the natural gas reserves expected to last for? If the project is

dependent on the import of fuel, how stable is the global price? If the fuel runs out or become uneconomical, will the power plant use some other source of fuel?

Clearly a lot of energy is needed to run the plant, from acquiring the fuel, purifying water and starting the turbines. It would be interesting to see some sort of energy budget to determine exactly how much energy is used in this process versus how much is actually produced.

Public Participation

Given the potential health and safety issues, and potential impacts on quality of life for nearby communities, it is essential that every effort be made to consult, and if necessary, capacitate nearby residents to take part in this process.

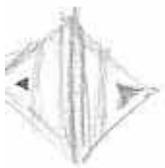
Opportunities

The proposed development will undoubtedly have negative impacts on environmental sustainability. We suggest that if the proposed development goes ahead, Eskom should investigate opportunities to mitigate against any 'externalities'. For example, the huge demands on already-stretched water resources could be compensated for though helping make water conservation measures accessible to poorer communities. Reaching the targets for renewable energy production set in the Draft Provincial Spatial Development could be assisted through installing or subsidising solar panels for low cost housing. Impacts of green-house emissions could be reduced by implementing appropriate greening projects. These interventions should be directly linked to the proposed development.

Conclusion

Thank you for taking the time to consider our views. We trust that our concerns will be addressed in the EIR and that the proponents will be willing to take a responsible approach to environmental management.

Yours sincerely



Sam Ralston
Environmentalist

Faks. nr. 0446905540 588

1.
Gilbert Muller
Posbus 362
Mosselbaai
6500.
23.6.05

Vir Aandagi: Kamal Govender
Brett Lawson

Ninham Shand
Posbus 1347
Kaapstad
8000

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Menere

Oopsiklusgasturbiene Kragstasie

Indien die Transmissielyste oor my plaas opgerig gaan word, wil ek u net inlig oor sekere aspekte van my boerdery waarmee probleme ondervind kan word.

Eerstens: Ek boer met volstruise, skape en beeste. Volstruis-broeipare word in elke kamp op my plaas geplaas vir die broeityd en die grootmaak van kuikens (Vanaf Junie tot einde Februarie). Dit is onmoontlik en buite die kwessie om die broeipare te skuif. Daar kan dus probleme wees met "baie kwaai mannetjies". (Ons het in die verlede probleme gehad daarmee met Eskom).

Ook my skape (aai) wot lam, mag nie versteur word in lamtyd nie. Lamtyd is dwars deur die jaar.

0446905540

Ons is ook bekommerd oor die oopmaak en toemaak van hekke.

Tweedens: Ek is ook 'n saai-boer wat ploeg saai en oes. Ek werk met groot masjinerie (Trekke, ploeg, stropers, platsnyers, ens.) waarmee dalk probleme kan ontstaan tussen die tonin

Ons is verder bekommerd oor besoedeling en geraas, veral die vrystelling van swaelsuurgas, stikstof, koolsuurgas, ens. Watter waarborg het ons dat daar nie nadelige invloed op waterbronne, voël-, diere- en plantlewe gaan wees nie of dat daar na "produksie by die kragstasie" wel probleme en/of besoedeling van water aard ookal kan ontwikkel nie. Wie gaan "Pa" staan daarvoor?

Ek verwag 'n weldeurdagte impakstudie, veral met betrekking tot my boerdery en gepaardgaande bekommernisse, en ook, (indien wel die "na-produksie" gevolge met gepaardgaande waarborge.

ANNEXURE 6: ATTENDANCE REGISTERS – PUBLIC FORUMS



NINHAM SHAND
CONSULTING SERVICES

EIA PROCESS FOR PROPOSED OCGT POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION AND
TRANSMISSION LINES
ATTENDANCE REGISTER- 2ND PUBLIC MEETING

Date 13 June 2005
Venue MOSSEL BAY LIBRARY HALL

| NAME | ORGANISATION | POSTAL ADDRESS | TEL | FAX | E-MAIL |
|------------|---------------------------------|---|---------------------------|----------------|--------|
| CHRIS | OCTOBER TRAINERS | 41 ROMAN STREET | 0121230697 | | |
| K. MAMAGE | SYDRAWA BEE BUSINESS FORUM | 2244 Mossel Bay | 0126422447 | | |
| Z. Mulker | Arum Valley | Postbus 362 MBay | 0446977009 | | |
| L. Vercell | NPA. | Lynndon@mpa.co.za. | 0214682831 044 6046045 | | |
| L. JANSSEN | SYNERGY (BEE) BUSINESS FORUM | 4 WAGERISO STR KUNYELITSHA, MOSSEL BAY | 073685 9504 | | |
| K. NAE | Eskom | FER DATABASE | 011 3002100 | | |
| C. Mulh. | Grandeur. | Postbus 185 Mosselbaai | 044 6153181 | 044 6153181 | |
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NINHAM SHAND
CONSULTING SERVICES

EIA PROCESS FOR PROPOSED OCGT POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION AND
TRANSMISSION LINES
ATTENDANCE REGISTER- 2ND PUBLIC MEETING

Date 13 June 2005 Venue MOSSEL BAY LIBRARY HALL

| NAME | ORGANISATION | POSTAL ADDRESS | TEL | FAX | E-MAIL |
|-------------|------------------------|--------------------------|-----------------|---------|------------------------------|
| T.M. HECKER | MB ARTISAN ASSOCIATION | 27 PARADE STR. MURRAY | 084 802 4205 | N/A | NONE |
| R. Louw | MB ARTISAN ASSOCIATION | 44 PARADE STR MURRAY | 084 802 4305 | N/A | NONE |
| E. Waterson | PROCON | 10694 Dankelby 6510 | 082415 8191 | 6981820 | nerisha.waterson@absa.net.za |
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EIA PROCESS FOR PROPOSED OCGT POWER PLANT, FUEL SUPPLY PIPELINE, SUBSTATION AND TRANSMISSION LINES

ATTENDANCE REGISTER- 2ND PUBLIC MEETING

Date 13 June 2005 Venue MOSSEL BAY LIBRARY HALL

| NAME | ORGANISATION | POSTAL ADDRESS | TEL | FAX | E-MAIL |
|---------------------------|---|-------------------------------|----------------------------|--------------|-----------------------|
| Maia, White | Lawyer | Box 10150, Bay | 083452091 | 020 69814161 | M. White@web.co.za |
| Hodevillers | Private | PO Box 742 MSB | 044 6977171 | 044 6977169 | Jelutpe@web.co.za |
| GJ (SHERIFF) | Residents Association of Dana Bay Community | PO Box 10651 Dana Bay 6510 | 044 6982015 | - | - |
| DR. PRESIDENT JIM MPUMELA | SINAGALA (BEE) FORUM | P.O. BOX 2244 MOSSEL BAY 6500 | 044-695 1529 0833627552 | 044-695 2689 | - |
| G. Baetholt | TELEKOM | P.O. BOX 6521 BAYVIEW GEORGE | 044-8031071 0836238260 | 044-8733983 | baetholt@telkom.co.za |
| R. Beckmann | ESKOM | AS PER DATABASE | 083 8538576 | 041-5582877 | As per Database |
| AK STOTT | ESKOM | " | 083 655 2660 | 011 5062782 | " |
| Rafiq | Private | PO Box 1050 Hartenbos 6520 | 0822540 6912 | - | chrisna@libcom.co.za |
| Maize. WB | Bay Mums | Box 25 Mosel Bay 6500 | - | - | - |

ANNEXURE 7: ISSUES TRAIL

MOSSEL BAY OCGT EIA: Final Scoping Report, June 2005: ANNEXURE 7: ISSUES TRAIL

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|---------------------|--------------|---|--|--|
| 1 | Quintus Muller | Landowner | Prefers transmission lines to be aligned along the R327. | First meeting with landowners, 24-Feb-05 | Noted. The alignment of transmission lines will be presented and assessed as alternatives. The preferred alignment will emerge as a result of the Environmental Impact Assessment (EIA) process. |
| 2 | Cornelius Muller | Landowner | Would like the construction phase of the transmission lines to be as short as possible. | First meeting with landowners, 24-Feb-05 | Noted. |
| 3 | Hanalié de Villiers | Landowner | Is concerned about the visual & noise impact of the power plant. | First meeting with landowners, 24-Feb-05 | Noted. Visual and noise impacts will be assessed in the Environmental Impact Report by the relevant specialist. |
| | | | Would the power plant be in keeping with the Mossel Bay Structure Plan? | First meeting with landowners, 24-Feb-05 | According to the Mossel Bay Chief Town Planner, the site falls within the Mossel bay Urban Edge and is zoned "Industrial". |
| | | | Would the electromagnetic fields (EMFs) affect livestock? | First meeting with landowners, 24-Feb-05 | There is no proven relationship between EMFs and human or animal health. Stipulated clearances will be maintained. |
| 4 | Ignatius Muller | Landowner | Aligning the transmission lines adjacent to the R327 would make access to them easier and would consolidate impacts | First meeting with landowners, 24-Feb-05 | Noted. |
| 5 | Francois Naude | DEA&DP | Upgrade at Proteus substation would require authorisation. | First authority meeting, 24-Feb-05 | The proposed project does not include upgrades at Proteus substation. |
| | | | Consolidating impacts is preferred, i.e. the power plant should be as close to the PetroSA facility as possible | First authority meeting 24-Feb-05 | Noted. |
| | | | Eskom's site screening study should be vetted by the environmental team in order to validate its results. | First authority meeting 24-Feb-05 | Noted. This has been done. There are not believed to be fatal flaws in the report. |
| | | | Water supply is a major issue of concern. | First authority meeting 24-Feb-05 | Noted. This will be addressed as part of the EIA process. |
| | | | If the site is zoned "Agriculture", the department of Agriculture would need to be contacted. | First authority meeting 24-Feb-05 | According to the Mossel Bay Chief Town Planner, the site falls within the Mossel bay Urban Edge and is zoned "Industrial". |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|----------------|--------------------------------------|---|---------------------------------------|--|
| 5 | Francois Naude | DEA&DP | The Gouritz Initiative should be contacted. | First authority meeting 24-Feb-05 | This has been done. Mr Ivan Donian from the Gouritz Initiative has been included as a key stakeholder for this project. |
| | | | Heritage Western Cape must be notified. | First authority meeting 24-Feb-05 | Noted. This will be undertaken as a matter of course. No authorisation is necessary, however Heritage Western Cape will be included as a commenting authority. |
| | | | Documents in the public domain must be clear on the low number of jobs being created. | First authority meeting 24-Feb-05 | Noted. This will be done. |
| | | | The visual assessment should take tourist activities along the R327 into account. | Second authority meeting 11-Mar-05 | Noted. This will be done. |
| 6 | Tonia Schonken | Mossel Bay Environmental Partnership | Will PetroSA still be functioning in 2007? | Key stakeholder meeting 03-May-05 | This falls outside the scope of this EIA. Even if PetroSA is decommissioned, the facility to receive gas/ liquid fuel would remain to service the proposed power plant. |
| | | | Is the supply of natural gas into the future assured? | Key stakeholder meeting 03-May-05 | The proposed power plant can operate on gas or fuel. |
| | | | Will water supply be available if needed? | Key stakeholder meeting 03-May-05 | The issue of water supply is noted as a concern. Should the plant be able to meet air emission regulations without implementing NOx abatement measures, the power plant would not require large quantities of water. This issue will be assessed in detail in the EIR. |
| | | | Specialist botanical, avifaunal, air quality, noise studies are necessary. | Key stakeholder meeting 03-May-05 | Noted. This will be done. |
| | | | The visual impact assessment must consider light pollution. | Key stakeholder meeting 03-May-05 | Noted. This will be done. |
| | | | Alien control would be required after brush clearing for the transmission lines. | Key stakeholder meeting 03-May-05 | Noted. |
| | | | What impacts would the proposed power plant have on the Blinde River? | Key stakeholder meeting 03-May-05 | There is unlikely to be any impacts at all as the site does not drain into the Blinde River. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|-------------------|--------------------------------|---|-----------------------------|---|
| 7 | Carel Steyn | PetroSA | Neighbouring ostrich farmers would be affected by the sirens. | Public meeting 03-May-05 | Noted. Noise levels will be assessed and implications discussed in the EIR. |
| 8 | T M Hector | Mossel Bay Artisan Association | What percentage of the skilled work on this project will be done by local labour? | Public meeting 03-May-05 | The issue of local labour will be addressed in the EIR. |
| | | | What scope of craft would be available for SMME? | Public meeting 03-May-05 | The issue of local labour will be addressed in the EIR. |
| 9 | Cornelius Muller | Landowner | He will not sell land for the servitude at market value. | Public meeting 03-May-05 | Noted. Servitude negotiations will be handled as per Eskom's standard procedure. |
| | | | The construction or transmission lines has too many problems for landowners | Public meeting 03-May-05 | Noted. |
| | | | Even though he negotiated a servitude corridor with Eskom, the Contractor who constructed the lines worked outside of the agreed area. All attempts to contact Eskom's Clerk of Works failed. | Public meeting 03-May-05 | Noted. This concern has been conveyed to the relevant personnel. |
| | | | He still hasn't been paid for the previous servitude through his land. The transmission lines were completed almost two years ago. | Public meeting 03-May-05 | Noted. This issue falls outside the scope of this EIA and will be addressed by Eskom separately. |
| 10 | Charl de Villiers | Botanical Society of SA | Avoid habitat loss in the following ecosystems: Albertinia Sand Fynbos, Mossel Bay Shale Renosterveld/ Herbetsdale Renoster Thicket and Swellendam Silcrete Fynbos. Where it cannot be avoided, suitable equivalent land should be identified and demarcated for dedicated conservation | Fax 22-Apr-05 | Noted. The specialist botanical assessment will take cognisance of these ecosystems and possible impacts on them. |
| | | | Planning should seek to promote functional connectivity and reduce fragmentation of habitat by appropriate restorative actions. | Fax 22-Apr-05 | Noted. Strategic plans and policies already exist and fall outside the scope of this EIA process. However, impacts on habitats (including fragmentation and connectivity impacts) will be discussed in the EIR. |
| | | | Use attached Terms of Reference (ToR), in consultation with the CapeNature regional ecologist and respective biodiversity specialists, as a guideline for drafting the ToR for the biodiversity specialist study. | Fax 22-Apr-05 | Noted. Cognisance has been taken off this in drafting the ToR for the specialist botanist. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|-------------------|-------------------------|---|------------------|---|
| 10 | Charl de Villiers | Botanical Society of SA | The biodiversity assessment should reflect a co-ordinated approach in assessing botanical and avifaunal impacts and should be presented as an integrated impact statement on biodiversity pattern and process in the eastern coastal management sector of the Gouritz corridor. | Fax 22-Apr-05 | Proper integration of relevant information is an objective of sound EIA practice. |
| | | | Where relevant and possible, conservation gains should be emphasized | E-mail 22-Apr-05 | Noted. |
| | | | Consult with the Gouritz Corridor initiative and CapeNature's regional ecologist regarding linking the proposed project to the goals and objectives of the Gouritz Corridor Initiative, the Cape Action for People and the Environment programme, and the STEP project. | E-mail 22-Apr-05 | Noted. Ivan Donian has been included as a key stakeholder and represents the Gouritz Initiative and CapeNature. |
| | | | All environmental reports must explicitly describe the water requirements of the proposed OCGT. If water is a significant operating component, it must be stated how water is to be supplied and managed and how the sustainability of the supply against broader municipal needs is to be assured. | Fax 22-Apr-05 | Noted. This will be done. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|-------------------|-------------------------|--|------------------|--|
| 10 | Charl de Villiers | Botanical Society of SA | All reports must demonstrate how the proponent intends to comply with the following NEMA principles (Section 2 of NEMA 107 of 1998): Avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity; Avoid degradation of the environment; Avoid jeopardising ecosystem integrity; Pursue the best practicable environmental option by means of IEM; Protect the environment as the people's common heritage; Control and minimise environmental damage; and Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems. This can be demonstrated by means of a statement of compliance - summary of measures, cross-referenced to NEMA principles, that will be adopted to avoid, minimise and remedy disturbance of ecosystem and loss of biodiversity. | Fax 22-Apr-05 | Noted. The NEMA principles are a major informant in sound EIA practice. |
| 11 | Sam Ralston | WESSA | Concerned that not enough is being done to promote more energy efficient technologies. | E-mail 16-May-05 | Noted. However, attention to such macro and strategic energy issues is outside the brief for this EIA. |
| | | | Unconvinced that the proposed OCGT power plant is in line with international and national agreements and policy that require South Africa to reduce greenhouse gas emissions and shift to renewable energy resources. | E-mail 16-May-05 | Noted. The air quality assessment would investigate emissions and South African legislative requirements. |
| | | | The Draft Provincial Spatial Development Framework policy states that 25% of all energy produced in the Western Cape must come from renewable sources by 2020. How will the proposed power plant contribute to achieving this goal? | E-mail 16-May-05 | The proposed plant is not intended to attempt to meet this goal. The proposed power plant is the only feasible option available to Eskom to meet projected electricity demand by 2007. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|----------------|------------------|--|---------------------|---|
| 11 | Sam Ralston | WESSA | Is (and if so, how is) the proposed power plant connected to PetroSA's Western Cape Gas Development project? Is the feasibility of the proposed power plant dependent on the PetroSA gas pipeline being built? | E-mail 16-May-05 | At present the proposed power plant is unrelated to the Western Cape Gas Development. The OCGT plant will be fuelled by kerosene from PetroSA. In future, however, should gas be made available via the gas pipeline, the power plant could be fuelled by gas. The proposed power plant is not dependent on the gas pipeline being built. |
| | | | Are the two OCGT power plants proposed in the Western Cape intended to replace the proposed PetroSA Combined Cycle Gas Turbine Power Plant? | E-mail 16-May-05 | No. The proposed OCGT power plants are intended to provide peaking capacity only. |
| | | | It would be useful to have an idea of the "big picture", i.e. what power plants are being planned where? A more strategic approach is needed to determine the best way forward with regard to energy supply in the Western Cape. Thus, cumulative impacts can be better understood, and the most sustainable solution pursued. | E-mail 16-May-05 | Eskom's proposals are in line with South African legislation, regulations and policies. In addition, Eskom applies a strategic electricity planning process to the issue of energy supply in South Africa. Strategic considerations will be acknowledged in the Scoping Report and Environmental Impact Report. |
| 12 | Johan du Preez | SusDev Solutions | The location map in the BID gives the erroneous impression that the proposed OCGT power plant lies 13 km from residential areas. This isn't true as Dana Bay and Kwanonqaba are located across the N2 a few kilometres away. | E-mail 17-May-05 | The purpose of the map in the BID was to give readers an idea of the location of the proposed power plant in relation to surrounding areas. It shows that the town centre of Mossel Bay lies 13 km to the east. It is not intended to indicate where residential areas are located. |
| | | | Eskom's policy of exporting electricity to neighbouring countries has resulted in electricity shortages. This policy should be revised. | E-mail 17-May-05 | Noted. However, Eskom's strategic policies are beyond the scope of this EIA process. |
| | | | Does Eskom's export policy imply that the "man in the street" sponsors some of the huge profits of energy intensive multinational companies? | E-mail 17-May-05 | The question is based on an assumption that is outside the scope of this EIA process. |
| | | | Does Eskom's export policy imply that the government/ Eskom is not serious about the Kyoto Protocol? | E-mail 17-May-05 | No. The air quality investigation will shed light on the extent and implications of emissions. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|----------------|------------------|---|---------------------|--|
| 12 | Johan du Preez | SusDev Solutions | Eskom's strategic investigation should include an assessment of the proposed technology on local environments/ communities. | E-mail 17-May-05 | Assessing the impacts of the proposed OCGT power plant on the environment and local communities is the purpose of this EIA process. This process will also seek to minimise negative impacts and, where possible, enhance positive impacts. |
| | | | The cumulative impacts of PetroSA and the proposed plant must be assessed. | E-mail 17-May-05 | Noted. The EIR will include a section on cumulative impacts. |
| | | | As PetroSA and the proposed OCGT power plant would share a site, both PetroSA and the power plant must adhere to Eskom's corporate governance and environmental management performance value systems. | E-mail 17-May-05 | Eskom intends purchasing the land from PetroSA for their proposed OCGT power plant. Although they will be located next to each other, the OCGT power plant is entirely separate from the PetroSA facility. PetroSA is not accountable in any way to Eskom's environmental policies or governance. |
| | | | The current EIA process should include an audit of PetroSA's current environmental management/ public participation performance in order to draw up an environmental management plan for the integrated activities/ sites of the proposed OCGT plant and PetroSA. | E-mail 17-May-05 | Eskom is responsible for the EIA as it relates to their proposed project. Eskom is not responsible for PetroSA's activities in any way or form. Therefore, assessing PetroSA's environmental management systems or public participation performance is beyond the scope of this EIA. |
| | | | The EIA should indicate what Eskom's future plans for the site are. Is the proposed project the first step to a Pebble Bed Nuclear Reactor? | E-mail 17-May-05 | Noted. However, nuclear energy generation requires entirely different technology. The existence of an OCGT power plant could thus not in itself be a precursor to a pebble bed reactor. |
| | | | PetroSA's gas reserves are running out. How will it be able to provide fuel in the future without changing its core business and hence its impacts | E-mail 17-May-05 | Noted. Future fuel sources for the proposed power plant have been considered as part of Eskom's strategic planning. The development of future gas sources, or liquid fuel from other existing or new sources, could fuel the proposed power plant in the long term. The proposed plant would continue to function even if PetroSA were to be decommissioned, as the facilities to pipe in fuel would remain. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|-------------------|-----------------------|---|---------------------|---|
| 12 | Johan du Preez | SusDev Solutions | Water consumption is of concern. | E-mail 17-May-05 | Noted. This concern has been captured in the Scoping Report and will be addressed in the EIR. |
| | | | The socio-economic assessment should consider the impact on tourism and land values in the vicinity of the plant. | E-mail 17-May-05 | Noted. This will be attended to in the EIR. |
| | | | Noise from PetroSA is already an issue. What will the cumulative impacts of PetroSA and the proposed OCGT power plant be on nearby communities. | E-mail 17-May-05 | Noted. This will be attended to in the EIR. |
| | | | The OCGT EIA should consider suitable environmental performance monitoring and public participation programme during operation of the proposed power plant. | E-mail 17-May-05 | Noted. The operational phase of the OCGT power plant will be addressed generically in the Environmental Management Plan to be developed for the construction phase of the project. |
| 13 | Mr O T Badenhorst | Tuinroete Agri Beperk | What is the precise alignment of the transmission lines? | E-mail 18-May-05 | The range of alternative alignments will be assessed during the EIA process. Thereafter, based on the outcomes of the EIA process, Eskom will select their preferred alignment. |
| | | | What are the possible impacts of the transmission lines on the environment (e.g. electromagnetic fields) | E-mail 18-May-05 | These impacts have been identified as far as possible during the Scoping Phase and captured in the Scoping Report. Significant impacts will be assessed and presented during the EIR Phase. |
| | | | Students from the University of the Western Cape (UWC), Geography Department, submitted comments during the Scoping Phase as an academic exercise. Their supervisor has indicated that they need not be registered as I&APs as they are unlikely to remain involved for the remainder of the EIA process. However, key issues and concerns raised by the students are presented in this issues trail. | | |
| 14 | Student | UWC: Geography Dept. | There is a concern about loss of agricultural land as an impact on farming activity. | E-mail 18-May-05 | Noted. The Department of Agriculture will be approached as a commenting authority. |
| | | | Will local labour be employed? | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | The impacts of emissions must be investigated (including health risks to local communities). | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | A safety issue regarding the pipeline was raised (viz. the possibility of explosions). | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Impacts on vegetation need to be addressed. | E-mail | Noted. To be addressed in the EIR. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|------------|----------------------|---|---------------------|---|
| 14 | Student | UWC: Geography Dept. | Impacts on avifauna need to be addressed. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Visual impacts of the proposed transmission lines and OCGT power plant need to be addressed. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Given the current water shortages, the issue of water supply needs to be investigated thoroughly. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Noise impacts need to be addressed. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Impacts of the pipeline need to be addressed. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Construction phase activities should take cognisance of all water courses. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Will people be evicted to accommodate the proposed power plant? | E-mail 18-May-05 | There is no indication at this time that people will be displaced as a result of the proposed project. |
| | | | Concern was expressed about groundwater contamination should the fuel supply pipeline leak. | E-mail 18-May-05 | Noted. To be addressed in the EIR. |
| | | | Concern was expressed about the economic viability of the proposed project. Will the electricity be affordable to the public? Is it economically viable to construct the power plant for short term purposes? | E-mail 18-May-05 | Noted. However, affordability of electricity is outside the brief for this EIA and the proposed project is not for short-term purposes. |
| | | | Long term options to meet electricity demand should be investigated. | E-mail 18-May-05 | Noted. The strategic level of electricity planning is acknowledged in the documentation underpinning this EIA. |
| | | | Will the OCGT power plant eventually start to operate 24 hours a day? | E-mail 18-May-05 | No. The plant in question is essentially for peaking purposes. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|---|-----------------------------|---|------------------------------------|--|
| | The following comments were received in response to the release of the Draft Scoping Report and its presentation at a Public Meeting on 13 June 2005. | | | | |
| 15 | Christiaan | October Tradings | Has no objection to the proposed transmission lines as long as local communities can be involved during the construction phase. | Second Public Meeting 13-Jun-05 | Noted. Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The detailed process will be described in the EIR. |
| 16 | Lester Jansen | Siyaqala BEE Business Forum | What is the duration of the construction phase? | Second Public Meeting 13-Jun-05 | Approximately 18 months. |
| | | | In terms of the Preferential Procurement Policy Framework Act, what are the employment and contracting opportunities during construction? | Second Public Meeting 13-Jun-05 | Noted. Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The detailed process will be described in the EIR. |
| | | | Will there be future electricity incentives for investors in collaboration with local and provincial government. | Second Public Meeting 13-Jun-05 | While incentives can be investigated, it should be noted that tariffs are determined by the National Electricity Regulator. |
| 17 | Monde Mpumela | Siyaqala BEE Business Forum | Economic benefits to the local community and SMME/ BEE participation pre- and post-construction must be clarified. | Fax 14-Jun-05 | Noted. Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The socio-economic study will be described in the EIR. |
| 17 | Monde Mpumela | Siyaqala BEE Business Forum | The social benefits of job creation, training and skills transfer needs to be determined | Fax 14-Jun-05 | Noted. Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The socio-economic study will be described in the EIR. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|---------------------------------|-----------------------------|---|------------------|---|
| | | | What positions are designated to be filled by locals? | Fax 14-Jun-05 | Noted. Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The socio-economic study will be described in the EIR. |
| | | | A skills audit must be undertaken. | Fax 14-Jun-05 | Noted. Eskom has indicated a commitment to social development. While a formal audit will not be undertaken, local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. |
| 18 | Lester Jansen and Monde Mpumela | Siyaqala BEE Business Forum | The economic impact study should determine the number and category of positions that will be filled by locals. | Fax 22-Jun-05 | Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The socio-economic study will be described in the EIR. |
| 18 | Lester Jansen and Monde Mpumela | Siyaqala BEE Business Forum | The skills audit must determine the availability of skills that may be required for the proposed project so as to determine the level of local employment that may be possible. A database of local skill is available from the Mossel Bay Municipality | Fax 22-Jun-05 | Noted. Eskom has indicated a commitment to social development. While a formal audit will not be undertaken, local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. Usually the transmission line contractor approaches the local municipality to assist with the recruitment of local skills. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|---------------------------------|-----------------------------|---|------------------|--|
| | | | The social impact assessment should consider applying labour intensive construction practices. | Fax 22-Jun-05 | Noted. Where feasible (from a time and economic perspective), labour intensive construction practices will be considered. Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The socio-economic study will be described in the EIR. |
| | | | The social impact assessment must include a recruitment strategy that comprises (i) a "local policy" to maximise employment opportunities taking into account the existing legislation and policies on professional procurement; and (ii) the communication strategy that will clarify the preference given to locals; (iii) the procedures to be followed by applicants and employers e.g. procedures for advertising jobs, for applying, and for notifying successful or unsuccessful candidates. | Fax 22-Jun-05 | Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. Eskom has indicated that at least 50% of the workforce would be sourced from local communities. The socio-economic study will be described in the EIR. |
| 18 | Lester Jansen and Monde Mpumela | Siyaqala BEE Business Forum | The social impact assessment must describe the training and skills development proposals associated with the pre-construction, construction and post-construction phases of the project. This must include (i) the number of people to be trained; (ii) the status of training (accredited or not); and (iii) the qualifications that will be obtained. | Fax 22-Jun-05 | Noted. However, as indicated above, there aren't large-scale employment opportunities associated with this project. Wherever possible, local labour will be utilised. Details regarding the number of local people, their training and possible qualifications that may be obtained will be presented in the EIR. The type of skills required include batch plant operators, ready mix truck drivers and skilled steel assembly workers. Unskilled work includes assistance with the pre-assembly of towers and general civil works. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|---------------------------------|-----------------------------|---|------------------|--|
| | | | The social impact assessment must include recommendations regarding support in assisting temporary employees to access employment opportunities after construction is complete e.g. through liaising with local business organisations and community organisations. | Fax 22-Jun-05 | As indicated above, the manner in which local labour is engaged will be undertaken as a separate drive by Eskom. The detailed process will be described in the EIR. |
| | | | Procurement requirements (importing services) must be described together with an analysis of whether these are available locally. The preferred areas from which the developer intends to procure services must be defined. Specific attention must be paid to the potential to procure goods and services from SMMEs, particularly those owned by HDIs and women. | Fax 22-Jun-05 | There are a handful of South African transmission line construction contractors registered on Eskom's vendor list. It is possible that international contractors would be invited to tender. Regardless of what contractor is hired, at least 50% of the workforce would be local labour. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. |
| | | | Undertake a complete economic assessment of the proposed project including information on job creation, procurement, multipliers, business modules, based on at least a 10 year horizon. An economic model must be based on primary research in the Western Cape and should quantify the direct employment and revenue that will be created by the various components of the project. | Fax 22-Jun-05 | A socio-economic impact assessment of the proposed project will be undertaken in the EIR phase. The results of the socio-economic study will be presented in the EIR. The scale of the proposed project is relatively small and it is not intended to provide an economic boost to the area. Hence a micro-economic study, as is suggested here, is not believed to be appropriate. |
| 18 | Lester Jansen and Monde Mpumela | Siyaqala BEE Business Forum | The projection of economic benefits to local communities should be based on local economic research and conditions. Where economic benefits to communities are the sole or major motivating factor for the project, all relevant economic modelling information must be provided. | Fax 22-Jun-05 | Noted. |
| | | | The basis on which job creation projections are made must be provided. | Fax 22-Jun-05 | It must be noted that the major motivating factor for the project is the need to generate electricity to meet projected shortages in 2007. Wherever possible, economic benefits to local communities will be enhanced. Noted. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|---------------|------------------|--|------------------------------|---|
| | | | Job creation must be determined and reported per component of the project. This must include data on permanent and temporary jobs and on the number of jobs per category (artisans, skilled, semi-skilled and unskilled). | Fax 22-Jun-05 | Noted. Job creation will be discussed in the socio-economic impact assessment and presented in the EIR. However, as the scale of the proposed project is relatively small and it is not intended to provide an economic boost to the area, a micro-economic study, as is suggested here, is not believed to be appropriate. |
| | | | The estimated rand value per service that will be procured from the local area must be provided. | Fax 22-Jun-05 | As discussed above, the scale of the proposed project, and the reason for it being proposed, suggests that a micro-economic study is not necessary. |
| | | | The model or approach to be applied to facilitate Broad Based Black Economic Empowerment, with supporting information, must be provided in the economic impact assessment. Supporting information must include signed commitments from these BEE partners or participants. | Fax 22-Jun-05 | Eskom's BEE policy will be presented in the EIR for public review. |
| | | | All sustainable development design parameters that are stated as having been incorporated into the design of the OCGT power plant must be included in the economic/ financial feasibility study. | Fax 22-Jun-05 | Sustainability design parameters as described in the project documentation to date have been costed as a matter of course in the determination of financial feasibility. |
| 19 | Olivia Andrew | EarthLife Africa | What amount of carbon emissions would the proposed power plant produce? Will there be limits imposed and will it be continuously monitored? | Letter received 20-Jun-05 | Carbon emissions are anticipated to be low and will be determined by the air quality specialist study. Emissions will be monitored on a regular basis as part of the normal operation of the plant. |
| | | | What is the life expectancy of the plant? | Letter received 20-Jun-05 | Approximately 25 years. |
| | | | What are the rehabilitation measures? | Letter received 20-Jun-05 | Rehabilitation will be identified in the EIR phase and reflected in the Environmental Management Plan. |

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| | | | Are there any guidelines for employing local communities? | Letter received 20-Jun-05 | Eskom has indicated a commitment to social development. Local contractors and labour will be identified to be skilled and utilised through the life of the project. The manner in which local labour is engaged will be undertaken as a separate drive by Eskom. |
| 20 | G J Oberholster | Residents Association of Dana Bay Conservancy | The proposed power plant will compound the noise and odour impacts of PetroSA. | Fax 17-Jun-05 | The proposed plant would generate noise. Noise impacts will be assessed in detail and the results presented in the EIR. It is unlikely that the proposed plant would emit any malodours. Odour impacts will be assessed by the air quality specialist study. |
| | | | The decision to locate the power plant adjacent to PetroSA was taken without any public participation. Consequently the current EIA process has little or no value. | Fax 17-Jun-05 | Eskom undertook a site screening study to determine the most appropriate (from a technical, logistical and financial perspective) location for the plant. The methodology and results of the screening study were reviewed by the environmental team and a review consultant. Therefore, while the site screening did not include a public participation component, the results are not believed to be fatally flawed. |
| | | | There is a concern that the proposed power plant could be expanded to a nuclear power station in the future. | Fax 17-Jun-05 | Nuclear energy generation requires entirely different technology. The existence of an OCGT power plant could thus not in itself be a precursor to a nuclear power station. |
| 20 | G J Oberholster | Residents Association of Dana Bay Conservancy | The power plant has no benefits specifically for the residents of Mossel Bay. | Fax 17-Jun-05 | Although limited employment opportunities would be a direct benefit to local residents, it should be recognised that the proposed power plant is designed to strengthen the national electricity grid. |
| | | | Mossel Bay's electricity demand is 3% of the proposed capacity of the plant. Therefore the electricity generated by the plant is intended to benefit other regions, while the negative impacts of, and risks imposed by, the plant will be felt by Mossel Bay. | Fax 17-Jun-05 | Electricity generation plants are not always located where there is a need for electricity, but rather where it makes sound technical and financial sense to locate them. For example, Mossel Bay might receive electricity generated from coal-fired power plants in Mpumalanga. |

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| | | | <p>Tourism and associated businesses would be negatively impacted upon. Tourism promotes development in the region, hence the power plant will negatively impact on growth and development of Mossel Bay and the region. The impact of the power plant on tourism has not been addressed in the Draft Scoping Report. The plant would add to the negative impact that PetroSA has on tourism. Mrs J Marais, Mossel Bay Tourism Bureau can be contacted in this regard.</p> | <p>Fax 17-Jun-05</p> | <p>Noted. The impact of the proposed power plant on tourism will be assessed in the socio-economic impact assessment and will be presented in the EIR.</p> |
| | | | <p>The power plant would be dependent on PetroSA for fuel, making PetroSA an integral part of the proposed project. Hence the EIA should include an assessment of the impacts of PetroSA.</p> | <p>Fax 17-Jun-05</p> | <p>An assessment of PetroSA falls outside the scope of this EIA. This EIA process will investigate the potential impacts of the proposed power plant and attempt to address only those issues of concern related to the power plant.</p> |
| | | | <p>The impact of the power plant on the market value of adjacent properties has not been addressed in the Draft Scoping Report. Properties were bought with the intention to develop in the future. People did not know about the proposed power plant. Who is going to compensate people for the loss in property value?</p> | <p>Fax 17-Jun-05</p> | <p>This concern will be addressed as part of the socio-economic impact assessment to be undertaken in the EIR phase. The plant is proposed to be constructed on land that has for some time been zoned for industrial use. Residential properties adjacent to industrial areas will, as a matter of course, have a lower market value.</p> |
| 20 | G J Oberholster | Residents Association of Dana Bay Conservancy | <p>The location of the plant needs to be reconsidered. The plant should be located in an area (e.g Coega in Port Elizabeth, where electricity demand is high) so as to reduce the amount of energy lost through transmission.</p> | <p>Fax 17-Jun-05</p> | <p>The location of the plant was determined using technical, financial and biophysical criteria, including load variances, land and fuel availability and costs, timing, a growing demand, high variances between peak and off peak capacities and the supply of fuel.</p> |

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| | | | If the power plant can't be moved so far, a site adjacent to the Proteus substation should be investigated. | Fax 17-Jun-05 | The possibility of locating the power plant adjacent to the existing Proteus substation site was investigated and the Proteus site was found to have relatively undisturbed natural vegetation (comprising Strandveld Dune Thicket, Renosterveld and Sand Plain Fynbos), exhibiting fairly high levels of species diversity and endemism. From a biological point of view, a site at Proteus substation is not desirable. From a technical perspective, the site does not have a large enough flat surface to accommodate the proposed OCGT power plant. |
| | | | A study should be undertaken to determine the impacts of PetroSA's tank farm, harbour activities, sea outfall pipeline and to determine their compliance with international best practice. An environmental management plan should be developed in conjunction with local residents. | Fax 17-Jun-05 | As indicated above, an EIA of PetroSA falls outside the scope of this EIA process. |
| | | | The best gas turbine technology should be used so as to limit emissions (noise and air pollution). Emissions must meet the strictest international standards. | Fax 17-Jun-05 | Noted. The turbine technology selected will, as a minimum, meet South African standards and guidelines. This will be investigated by the air quality specialist study. |
| | | | For a radius of 1 500 m, the maximum noise levels must not exceed the strict levels designated for a residential area with no ambient noise. | Fax 17-Jun-05 | The noise assessment commissioned as a specialist study for this EIA will determine the statutory parameters relevant to this project. |
| 20 | G J Oberholster | Residents Association of Dana Bay Conservancy | An impact study and management plan, which must include affected parties and the Dana Bay Residents Association, must be developed for the construction phase of the proposed plant. | Fax 17-Jun-05 | Noted. A construction phase Environmental Management Plan (EMP) will be developed and be available for review by the public in the EIR. |
| | | | An overarching environmental management plan must be developed, in association with affected parties, for the power plant and PetroSA. | Fax 17-Jun-05 | Guidelines for the operation of the power plant will be developed. However, the operation of PetroSA falls outside the scope of this EIA process. |

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| 21 | Charl de Villiers | Botanical Society of South Africa | Project planning should seek to promote functional connectivity and reduce fragmentation by restorative actions. With reference to the first round of comments, what are the strategic plans and policies in place and why do they fall outside this EIA process? | Fax 20-Jun-05 | It must be noted that the area in question is mainly farmland. The only area with remnants of indigenous vegetation is in the drainage lines along the westernmost transmission line route alternative. Functional connectivity and fragmentation will be addressed as part of the botanical assessment. Please refer to Section 1.1 of the Scoping Report which discusses the strategic policies and plans. These policies and plans discuss the electricity supply, demand and generation context within South Africa and hence, the strategic planning has already occurred. On a project level, planning will indeed attempt to promote functional connectivity, where such connections exist. |
| | | | The Sub-tropical Thicket ecosystem Planning Project, the STEP Megaconservancy Network and the Gouritz Initiative must be recognised as key conceptual, policy and planning informants in this environmental process. | Fax 20-Jun-05 | They are indeed informants in this process and will be taken into account during the botanical assessment. |
| | | | The section on flora should be rewritten to reflect best current understanding of terrestrial biodiversity pattern and process in the Gouritz-Mossel Bay region, threats to its persistence and strategies and plans for conservation. | Fax 20-Jun-05 | Noted. This section will be bolstered in the EIR. However, it must be noted that the study site is far removed from a pristine condition. The area is characterised by cultivated and grazing land. The botanical assessment will investigate biodiversity patterns and processes. |
| 21 | Charl de Villiers | Botanical Society of South Africa | Pay attention to the type and status of threatened vegetation, the ecological processes that maintain these ecosystems and to the identification of locally extant habitats that would represent the spatial surrogates for these ecological processes. | Fax 20-Jun-05 | Noted. The botanical assessment will investigate these issues. |

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| | | | The proposed terms of reference for the biodiversity assessment are inadequate. They should emphasise the identification, assessment and evaluation of potential impacts of the various project alternatives on the structural and functional aspects of biodiversity. | Fax 20-Jun-05 | The proposed terms of reference were developed taking into account BotSoc's recommendations. The ToR for the botanist includes an assessment of the significance of impacts of the various project alternatives on botanical/biodiversity patterns and processes. |
| | | | The terms of reference should explicitly refer to regional conservation priorities identified by the STEP project and Gouritz Initiative, and integrate project-related impacts in terms of the threats and/or opportunities they present in terms of such conservation priorities. | Fax 20-Jun-05 | While not specifically referred to in the ToR, the STEP project and the Gouritz Initiative will inform the botanical assessment. |
| | | | The terms of reference for the biodiversity specialist should be submitted to the CapeNature regional ecologist for comment prior to finalisation in the Plan of Study for EIR. | Fax 20-Jun-05 | Ivan Donian of CapeNature's Gouritz Initiative is a registered I&AP and has been notified of the release of the Draft Scoping Report and been issued with the report summary, which includes a list of the scoped issues and specialist studies. To date CapeNature has not raised any issues of concern. |
| | | | BotSoc's recommended terms of reference for the consideration of biodiversity in environmental assessment and decision-making should be referred to. | Fax 20-Jun-05 | Noted. This has been done. |
| 22 | Gilbert Muller | Landowner (Arum Valley) | Raises ostriches in each camp on farm. Breeding pairs and hatchlings cannot be disturbed between June and February. | Fax 23-Jun-05 | Noted. If necessary, specific measures to manage such impacts would be incorporated in the EMP and negotiated with the landowner. |
| 22 | Gilbert Muller | Landowner (Arum Valley) | Sheep can also not be disturbed during lambing, which occurs throughout the year. | Fax 23-Jun-05 | Noted. If necessary, specific measures to manage such impacts would be incorporated in the EMP and negotiated with the landowner. |
| | | | Concerned that gates will be left open. | Fax 23-Jun-05 | Strict control over gates would be enforced. |
| | | | Concerned that transmission towers will restrict grain farming activities, e.g. ploughing, planting, harvesting etc. | Fax 23-Jun-05 | Noted. The degree to which such activities would be hampered by the proposed project will be addressed in detail in the EIR. |

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| | | | Concerned about pollution and noise, particularly air pollution. Are guarantees in place that water resources, plants and animals will not be affected and who is responsible? | Fax 23-Jun-05 | Noted. Guarantees should be seen in the context of the strict statutory requirements for the operation of the power plant, as well as the on-going opportunity for independent monitoring of environmental performance. Specialist studies will investigate these issues. |
| | | | Expects a thoroughly considered EIA that also addresses operational phase impacts on agricultural activities. | Fax 23-Jun-05 | Agreed. This will be documented in the EMPs for construction and operation. |
| 23 | Johan du Preez | SusDev Consultants | The Eskom site screening study is fatally flawed. It is a "justification process" that followed after the site had been selected. | Fax 23-Jun-05 | The methodology and results of the screening study were reviewed by the environmental team and a review consultant. The results are not believed to be fatally flawed. |
| | | | The site selection process does not comply with the good corporate governance model adopted by government and Eskom. It is inconceivable that the environmental team and DEAT have approved the findings of the study. | Fax 23-Jun-05 | The environmental authorities have not approved the findings of the study but will be informed by the review undertaken. They will be the final arbiter in this regard. |
| | | | A superficial approach was followed in the screening study. | Fax 23-Jun-05 | Noted. |
| | | | Key socio-economic activities in the area include real estate development, building construction, domestic and international tourism and "the sense of place" is not mentioned in the screening study. | Fax 23-Jun-05 | These socio-economic issues were addressed in the screening study (pages 23-26 & 28) and will also be independently addressed in the EIR. |
| 23 | Johan du Preez | SusDev Consultants | The site screening did not include for consultation with the thousands of residents located within a few kilometers of the site. | Fax 23-Jun-05 | Acknowledged. Whether this is a fatal flaw in the process in its entirety will be decided by the environmental authorities. |
| | | | No cognisance was taken of the spatial development framework of the Town Council of Mossel Bay that indicate future residential growth nodes towards the PetroSA site. | Fax 23-Jun-05 | The EIA <i>per se</i> has certainly taken the IDP-derived SDF into account, specifically the Growth Management Framework for Mossel Bay. |

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| | | | <p>The screening study describes the PetroSA site as highly visible, noisy and industrial. It also states that the current noise and air quality levels are quite high (<i>sic</i>). Based on these untested assumptions and without considering the thousands of adjacent residents, the negative impacts are considered to be regional and having a low significance. The power plant with four monstrous turbines, 30 - 60 m high cooling towers, twin 30 - 40 m high transmission lines and polluted air emission rates would dominate most of the impacts associated with the site. Therefore the negative physical impact should be rated local with a high significance.</p> | Fax 23-Jun-05 | Noted. An assessment of visibility, noise and air quality at the proposed site will be examined in detail in the project-level EIA. Should the impacts be so significant as to preclude the project from going ahead, this will be reflected in the EIR. |
| | | | <p>Because Mossel Bay is considered to be the gateway to the Garden Route, the sense of place category should be rated local and regional with a high significance.</p> | Fax 23-Jun-05 | Noted. An assessment of the sense of place will be examined in detail in the project-level EIA. |
| | | | <p>The screening study emphasises the unique vegetation, the largely undeveloped area and sense of place of the area adjacent to Proteus substation. Contrary to the screening study, a cursory visit to Proteus indicates that the vegetation is confined to a narrow strip between the southernmost fence and the R327 and somewhat west of the facility. The vegetation surrounding the rest of the substation is of no significance.</p> | Fax 23-Jun-05 | Specialist Information indicates that the vegetation surrounding Proteus substation is ecologically significant (Nick Helme, <i>pers. comm.</i>). |
| 23 | Johan du Preez | SusDev Consultants | <p>Several huge (30 - 40 m high) transmission lines cross the countryside before entering and exiting the substation, with its huge transformers and other equipment. The sense of place is that of a heavily industrialised area.</p> | Fax 23-Jun-05 | The area surrounding Proteus substation is not zoned industrial or considered to be industrial in nature. |
| | | | <p>Only a few people would be affected by an OCGT plant located at Proteus substation.</p> | Fax 23-Jun-05 | Opinion noted. |

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| | | | <p>The comparative assessment exercise conducted to determine the most suitable site is seriously flawed. Locating the power plant at Proteus does away with the transmission lines and would require two pipelines (water and kerosene) at ground level. The comparative environmental impacts (or footprints) of these two options have been omitted and should be included in the site selection process. A 10 m wide pipeline corridor will have a relatively friendly environmental footprint compared to the visually intrusive transmission lines needing a 55 m servitude each, separated by 400 m. This was excluded from the comparative assessment used in the site selection process.</p> | <p>Fax 23-Jun-05</p> | <p>The methodology and results of the screening study were reviewed by the environmental team and a review consultant. The results are not believed to be fatally flawed. Note that the total servitude width for the two proposed transmission lines would be approximately 85 m. The installation of underground pipes would require extensive earthworks and consequent habitat destruction.</p> |
| | | | <p>Switching to pipes would generate considerable project savings.</p> | <p>Fax 23-Jun-05</p> | <p>Eskom has indicated that due diligence is applied in their management of financial responsibilities.</p> |
| | | | <p>It is clear that should the above-mentioned issues be factored into the comparative assessment exercise, the power plant would be located at Proteus.</p> | <p>Fax 23-Jun-05</p> | <p>The location of the plant was determined using technical, financial and biophysical criteria, including the issues as mentioned.</p> |
| 23 | Johan du Preez | SusDev Consultants | <p>Heavy industrial development like the OCGT power plant is not aligned with the sustainable development model of Mossel Bay. PetroSA was a mistake and did not undergo an EIA. Therefore it should not be used as an argument to perpetuate a legacy of poor decisions.</p> <p>Given the hazardous nature of the operations at PetroSA and the OCGT power plant, a shared site will increase the risks associated with the occurrence of catastrophic events. The EIA should assess these risks.</p> | <p>Fax 23-Jun-05</p> | <p>The location of proposed power plant is in alignment with Mossel Bay's Growth Management Framework. The implications of the sustainable model mentioned will be investigated. Furthermore the EIA process allows for informed decision-making to prevent the perpetuation of poor decisions.</p> <p>A risk assessment will be undertaken for the proposed power plant and fuel supply pipeline. As indicated above, investigations with respect to PetroSA falls outside the scope of this EIA. Any queries relating to PetroSA should be addressed directly to PetroSA.</p> |

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| | | | The decision to site the OCGT power plant at PetroSA should be reconsidered. | Fax 23-Jun-05 | The location of the plant was determined using technical, financial and biophysical criteria and is not deemed to have any fatal flaws. |
| | | | The scope of the EIA does not include for the potential impacts of sourcing kiloliters of fuel and possibly water. "Upstream" and "downstream" activities of the development needs to be considered. | Fax 23-Jun-05 | Fuel and water use will indeed be addressed in the EIR, as will secondary and consequential impacts, as far as possible. |
| | | | PetroSA will have to make major process changes to its product mix to meet the power plant's fuel requirements. From a legal perspective this would be subject to an EIA. This EIA should be broadened to capture the impacts caused by the change in operating activities at PetroSA. | Fax 23-Jun-05 | PetroSA has indicated that process changes will not be required in order to meet the power plant's fuel requirements. However, should this become necessary PetroSA would need to comply with the relevant legislation. |
| | | | The size and operating parameters for the power plant must be finalised in time for the assessment stage. The parameters decided should be used for the impact assessment and included in the operating manual of the plant. | Fax 23-Jun-05 | Agreed. |
| 23 | Johan du Preez | SusDev Consultants | All assessments must be based on the maximum operating capacity of the turbines. | Fax 23-Jun-05 | This plant is designed for peaking capacity with a maximum load factor of 15% per annum (an average of approximately 4 hours per day) and therefore will be assessed accordingly. |
| | | | Ensure that the best available technology and sound dampening methodologies are used to prevent any increase in noise levels at a distance of 1.5 km from the plant. | Fax 23-Jun-05 | The noise assessment commissioned as a specialist study for this EIA will determine the statutory parameters relevant to this project. |
| | | | Use the best available technology and dry low emission turbines to limit NOx so as to not place undue pressure on water resources in the region. | Fax 23-Jun-05 | The issue of water supply has been noted as a concern. Should the plant be able to meet air emission regulations without implementing wet NOx abatement measures, the power plant would not require large quantities of water. This issue will be assessed in detail in the EIR. |

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| | | | Water emanating from air pollution control will have to be treated. | Fax 23-Jun-05 | Agreed and to be dealt with in the EIR. |
| | | | It is incorrect to fix the height of the towers at 30 m before the dispersion modeling exercise has been completed. The site screening exercise refers to towers of 40 - 60 m high, which seems more realistic. | Fax 23-Jun-05 | Agreed and to be dealt with in the EIR, by the air quality specialist. |
| | | | The visual impact of the plant at PetroSA would have a significant negative impact on tourism, a key driver for the sustainable development of Mossel Bay. | Fax 23-Jun-05 | The visual impact of the proposed power plant is being assessed as a specialist study, to inform the EIR. |
| 24 | Sam Ralston | WESSA | A wider range of alternatives should be considered in the EIA. Environmental issues seem to be a secondary consideration in the site screening study. Environmental and health issues should be of primary or at least equal concern in identifying suitable sites. Consequently, this does not appear to be a suitable means of addressing the issue of alternatives. | Fax 24-Jun-05 | Alternative sites were investigated in the screening study. Environmental concerns formed a component of the screening study. A more detailed environmental impact assessment will be undertaken in the EIA process for the proposed site. |
| 24 | Sam Ralston | WESSA | Dismissing the "no go" alternative is not supported. Should the project not go ahead, Eskom will find another solution (e.g. find another site or implement management interventions). | Fax 24-Jun-05 | The "no go" alternative has not been dismissed, it is simply not being evaluated at the same level of comparative detail as the project alternatives are. The "no go" alternative would be exercised as a result of the environmental authorities issuing a negative record of decision, i.e. the need to meet increased electricity demand will be addressed at a national, strategic level. |
| | | | The full range of technology alternatives must be addressed in the EIA to find the most environmentally sound solution. | Fax 24-Jun-05 | The screening study specifically deals with peaking generation technologies and in this respect is comprehensive. |

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| | | | A range of operating scenarios must be considered in the EIA, including worst case/disasters, technology failure, full-time operation, 8 hour operation and peak operation. | Fax 24-Jun-05 | In considering the EIR, the environmental authorities will determine whether the range of operating scenarios addressed in the EIR is sufficiently wide. This plant is designed for peaking capacity with a maximum load factor of 15% per annum (an average of approximately 4 hours per day) and therefore will be assessed accordingly. |
| | | | Because the plant can operate using different fuels, including diesel oil, the impacts of using alternative fuels should be considered in the EIA. | Fax 24-Jun-05 | Agreed. This will be addressed as part of the EIR. The fuels that could be used are kerosene-type products, natural gas and diesel. |
| | | | There is inconsistency with regard to the height of the stacks. The screening report refers to a height of 40 - 60 m high while the Draft Scoping Report states that the stacks will only be 30 m high. This would have implications in terms of air quality and needs to be clarified. | Fax 24-Jun-05 | The optimum stack height will be determined by the air quality assessment. |
| 24 | Sam Ralston | WESSA | While they recognise that there is a transition period towards implementing greener technology, WESSA does not support the building of new infrastructure that produces greenhouses gases and uses non-renewable resources. WESSA would be interested in a comparison of the emissions between coal-fired and OCGT plants. If OCGT is cleaner, would it be possible to operate it for longer periods of time and replace some of the energy (and impacts) that come from coal-powered plants? | Fax 24-Jun-05 | With respect to a comparison between coal-fired and OCGT power plants, this has been addressed in the screening study. The specific emissions of the OCGT plant will be assessed in the EIR Phase to allow a more detailed comparison. The average cost of generation from coal is approximately R95/Megawatt hour (MWh) as opposed to the cost of the proposed plant which has been assessed to be R2500/MWh, hence the lower proposed load factor for the proposed OCGT power plant. |
| | | | Given their proximity, the cumulative air quality impacts of PetroSA and the OCGT plant must be assessed. | Fax 24-Jun-05 | The air quality specialist will assess the impacts with respect to the ambient air quality. |
| | | | The impacts of heat emission on local climate must be assessed. | Fax 24-Jun-05 | A comment in this regard will be made by the air pollution specialist. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
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| | | | The source of water and its impacts must be considered. Would it be possible to use waste water in some of the processes that demand water? | Fax 24-Jun-05 | The issue of water supply has been noted as a concern. Should the plant be able to meet air emission regulations without implementing NOx abatement measures, the power plant would not require large quantities of water. This issue will be assessed in detail in the EIR. |
| | | | What method will be used to demineralise water? How much energy is used for this? The disposal of resultant waste needs to be addressed in the EIR. | Fax 24-Jun-05 | These issues will be assessed in detail in the EIR. |
| | | | Exactly how effluent and wastes will be disposed off must be explicit in the EIR. It must be specified exactly what will be produced, how much of it, how it will be disposed off, and what the impacts of this will be? Alternative means of managing this waste must be explored e.g. can it be used by other industries? | Fax 24-Jun-05 | These issues will be assessed in detail in the EIR. |
| 24 | Sam Ralston | WESSA | Health and safety of local residents must be considered, especially considering the hazardous substances stored on site. Will there be an evacuation plan? | Fax 24-Jun-05 | In terms of the scale of potential risks associated with the power plant, a residential evacuation plan is not deemed necessary. Health and safety are issues that will be addressed in the EIR. |
| | | | Is there a risk of soil and groundwater contamination? | Fax 24-Jun-05 | This issue will be assessed in detail in the EIR. |
| | | | The source of technology and building materials , and the source of fuel and its impacts, warrants consideration. | Fax 24-Jun-05 | The source of technology and building materials will not be assessed as part of this EIA. However, Eskom ensures that their suppliers are compliant with the relevant quality and environmental standards. The source, transport, storage and use of the kerosene fuel for the power plant will be dealt with in detail in the EIR. |
| | | | Will the proposed plant necessitate the upgrade of other facilities (e.g. transmission lines and substations)? | Fax 24-Jun-05 | Not according to the information presently in hand. |

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| | | | WESSA is concerned about the long term sustainability of the project and would be interested in an assessment of the financial feasibility of the entire project. | Fax 24-Jun-05 | Eskom has undertaken a full feasibility study, which indicates that the project is economically viable. |
| | | | What is the OCGT's expected lifespan? | Fax 24-Jun-05 | Approximately 25 years. |
| | | | How long are the natural gas reserves expected to last for? | Fax 24-Jun-05 | The life of the plant is not dependent on the gas reserves currently supplying PetroSA. |
| | | | If the project is dependent on the import of fuel, how stable is the global price? If fuel runs out or becomes uneconomical, will the power plant use some other source of fuel? | Fax 24-Jun-05 | Although global fuel prices do have a bearing on the cost of operation, the project viability is not dependent on the stability of the global fuel price. If liquid fuel becomes unavailable, natural gas can be used to fuel the plant. |
| | | | A lot of energy is needed to run the plant, from acquiring fuel, purifying water and starting the turbines. It would be interesting to see an energy budget to determine exactly how much energy is used in this process versus how much is actually produced. | Fax 24-Jun-05 | As far as electricity is concerned, approximately 1kW is required for each 100kW produced. |
| 24 | Sam Ralston | WESSA | Every effort must be made to consult, and if necessary, capacitate nearby residents to take part in the process. | Fax 24-Jun-05 | Agreed. This is being undertaken as part of the public participation process. |
| | | | The proposed development will have negative impacts on environmental sustainability. WESSA suggests that if the project goes ahead, Eskom should investigate opportunities to mitigate against any "externalities". For example, the huge demands on stretched water resources could be compensated for through helping make water conservation measures accessible to poor communities. | Fax 24-Jun-05 | Noted. This proposal will be forwarded to the proponent for consideration and will be addressed in the EIR. |

| No. | Individual | Organisation | Question, Issue or Concern | Reference | Action/ Response |
|-----|------------|--------------|--|--------------------------|---|
| | | | <p>Reaching targets for renewable energy production set in the Draft Provincial Spatial Development Framework could be assisted through installing or subsidising solar panels on low cost housing. Impacts of green-house emissions could be reduced by implementing appropriate greening projects. These interventions should be directly linked to the project.</p> | <p>Fax 24-Jun-05</p> | <p>Although not related directly to the project in question, Eskom does apply considerable effort in developing and applying renewable energy technologies and off-grid supply.</p> |

ANNEXURE 8: I&AP DATABASE

MOSSEL BAY OCGT EIA: Draft Scoping Report, June 2005: ANNEXURE 8: I&AP DATABASE

| Name | Organisation | Address 1 | Address 2 | Address 3 | Address 4 |
|-----------------------------|---|-------------------|----------------|-----------|-----------|
| Ignatius Muller | Patryfontein | P O Box 271 | Mossel Bay | 6500 | |
| Quintus Muller | Patryfontein and Leeuwin | P O Box 271 | Mossel Bay | 6500 | |
| Cornelius J Muller | Haelkraal | P O Box 185 | Mossel Bay | 6500 | |
| Henry Muller | Bartelsfontein | P O Box 179 | Mossel Bay | 6500 | |
| Jacque & Hanalie Devilliers | Farm Harterus | P O Box 742 | Mossel Bay | 6500 | |
| Morris Barnard | Buffels Kloof 205 | P O Box 46 | Groot Brak | 6525 | |
| Johnny Muller | Zuur Rug 207 & 208 | P O Box 185 | Mossel Bay | 6500 | |
| Pierre Muller | Leeuwin and Roodrif | P O Box 402 | Mossel Bay | 6500 | |
| Gilbert Muller | Arum Valley | P O Box 362 | Mossel Bay | 6500 | |
| Stoffel Fivaz | Secretary: Voelvlei Farmers Union | P O Box 6 | Johnson's Pos | 6504 | |
| Ivan Donian | Business Unit Manager: Cape Nature | Private Bag X6546 | George | 6530 | |
| Eddie Kruger | Town Planner: Mossel Bay | P O Box 25 | Mossel Bay | 6500 | |
| Danie Smit | DEAT | Private Bag X447 | Pretoria | 0001 | |
| Neil Lambrecht | DEA&DP | Private Bag X6509 | George | 6530 | |
| Carel Steyn | PetroSA: Manager: Optimisation and Development | Private Bag X14 | Mossel Bay | 6500 | |
| Mr Koos Pretorius | South African Civil Aviation Authority: Airports Inspector Navaid's & Comms | Private Bag X08 | WATERKLOOF | 0145 | |
| James Bredenkamp | Spoonet: Assistant Manager Estates | PO Box 1276 | Joubert Park | 2044 | |
| Willie Boeijs | National Energy Regulator: Senior Manager | PO Box 785080 | SANDTON | 2146 | |
| K P Landman | Department of Minerals and Energy: Directorate Mine Surveying & Mapping: Senior Inspector: Mine Health and Safety | Private Bag X59 | PRETORIA | 0001 | |
| Mr Elvin Harris | Department of Trade and Industry: Infrastructure Logistics Manager | Private Bag X84 | Pretoria | 0001 | |
| Sipho J Sithole | Telkom | P O Box 1142 | Port Elizabeth | 6000 | |
| Samantha Ralston | WESSA: Western Cape Region | P O Box 30145 | Tokai | 7966 | |

| | | | | | |
|--------------------|---|--|------------------|------------|-------------------|
| Olivia Andrew | EarthLife Africa | P O Box 176 | Observatory | 7935 | |
| Prof Kevin Bennett | Energy Research Centre | Energy Research Centre, Dept of Mechanical Engineering | UCT | P Bag | Rondebosch, 7701 |
| Henry Hill | Eden District Municipality Planning Dept | P O Box 12 | George | 6530 | |
| Tonia Schonken | Mossel Bay Environmental Partnership | P O Box 732 | Hartenbos | 6520 | |
| Marie de Klerk | Ward councillor | P O Box 10192 | Dana Bay | 6510 | |
| Charl de Villiers | Conservation Unit Botanical Society of South Africa | Private Bag X10 | Claremont | 7735 | |
| Johan du Preez | SusDev Solutions | P O Box 10621 | Dana Bay | 6510 | |
| Gert Greeff | Estates Manager: Eskom Nuclear Sites | | | | |
| Richard Malakasa | Alpha Holdings | 3 Ennerdale Road | Pinelands | 7405 | |
| Barry Jacobs | Gourikwahuis | 40 Hibiscus Avenue | Great Brak River | 6525 | |
| Danie Swanepoel | DEA&DP | Private Bag X6509 | George | 6530 | |
| Riaan Smit | Eskom Distribution: Network Planning | | | | |
| Liz Dekker | Eskom | P O Box 2015 | George | 6530 | EMAIL ONLY |
| Michael Dyssel | UWC: Dept of Geography | Private Bag X17 | Bellville | 7535 | |
| R Louw | Mossel Bay Artisan Association | 27 Parade Street | New Hope Town | Mossel Bay | 6501 |
| T M Hector | Mossel Bay Artisan Association | 27 Parade Street | New Hope Town | Mossel Bay | 6505 |
| Beverley Boer | Mossel Bay Environmental Partnership | 106 Klipper Street | Mossel Bay | 6506 | |
| Chris de Jager | Farm Kleinberg/ Saaikamp | P O Box 1050 | Hartenbos | 6520 | |
| Christo Kotze | Tuinroete Agri | P O Box 70 | Mossel Bay | 6500 | |
| Nicola Mawson | Engineering News | P O Box 75316 | Garden View | 2047 | |
| Eileen Green | PetroSA | Private Bag X14 | Mossel Bay | 6500 | |
| O T Badenhorst | Tuinroete Agri Beperk | P O Box 70 | Mossel Bay | 6500 | |
| J Lourens | PetroSA | Private Bag X14 | Mossel Bay | 6500 | |
| Lyndon Metcalf | National Ports Authority | P O Box 1942 | Mossel Bay | 6500 | |
| Frans Marx | Fontein Boerdery cc | P O Box 2052 | Mossel Bay | 6500 | |

ANNEXURE 9: LETTER INDICATING AVAILABILITY OF DRAFT SCOPING REPORT



NINHAM SHAND

CONSULTING SERVICES

3 June 2005

Email: enviro@shands.co.za

Dear Sir/ Madam

Mossel Bay Open Cycle Gas Turbine Power Plant and Associated Infrastructure: Environmental Impact Assessment: Summary of Draft Scoping Report

Please find enclosed the Summary of the Draft Scoping Report for the proposed Open Cycle Gas Turbine (OCGT) power plant, fuel supply pipeline, substation and transmission lines adjacent to PetroSA near Mossel Bay. This correspondence is being distributed to the interested and affected parties (I&APs) that have registered as participants in the process.

One of the main purposes of the Draft Scoping Report is to describe the range of potential impacts associated with the proposed project and to identify those that are of significance and would thus need to be investigated in detail in the Environmental Impact Report (EIR) Phase. The EIR Phase follows the Scoping Phase in the Environmental Impact Assessment process.

The report also contains information regarding the following:

- The identification of feasible project alternatives;
- Issues and comments raised by I&APs to date;
- The Plan of Study for EIR (PoSEIR), which outlines the manner in which the EIR Phase will be undertaken; and
- The terms of reference for specialist studies to be undertaken during the EIR Phase.

This letter serves to invite you to the second Public Meeting to be held on 13 June 2005 at the Mossel Bay Library Hall, 99 Marsh Street. The Public Meeting will comprise a presentation at 15:00, which will be repeated at 18:00, with opportunity for discussion throughout. The purpose of this meeting is to present the Draft Scoping Report, address queries and concerns, and to capture the comments elicited. The comments and concerns will be carried forward in the documentation as the assessment progresses. The Draft Scoping Report can be reviewed at the Mossel Bay and D'Almeida Public libraries, or at the website www.eskom.co.za/eia, from 3 June 2005 and the comment period for the Scoping Phase closes on 23 June 2005.

Yours sincerely
NINHAM SHAND

KAMAL GOVENDER
Environmental Practitioner

BRETT LAWSON PrSciNat
Project Manager

CAPE TOWN

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BOARD OF NINHAM SHAND (PTY) LTD
BMH Tsita (Chairman)
AW Mohr (Managing Director)
AHM Gorgens
GN Gwagwa
YVN Musvoto
JD Pretorius
KC Simon

Registered Firm
SA Association of Consulting Engineers

ISO 9001 : 2000 Certified



NINHAM SHAND
RAADGEWENDE DIENSTE

3 Junie 2005

Epos: enviro@shands.co.za

Geagte Heer/Dame

**Mosselbaai Opsiklusgasturbiene Kragstasie en Gepaardgaande Infrastruktuur:
Omgewingsinvloedbeoordeling: Samevatting van Voorlopige
Omvangsbepalingsverslag**

Vind asseblief ingesluit die samevatting van die Voorlopige Omvangsbepalingsverslag vir die Opsiklusgasturbiene (OSGT) kragstasie, brandstoftoevoerpyplyn, substasie en transmissielyste aangrensend aan PetroSA (voorheen bekend as Mossgas) naby Mosselbaai. Hierdie korrespondensie word versprei aan alle belanghebbende partye wat geregistreer het om deel te neem in die proses.

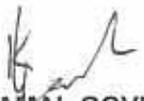
'n Belangrike doel van die Voorlopige Omvangsbepalingsverslag is om die verskeie impakte te beskryf wat moontlike veroorsaak kan word deur die voorgestelde projek, en om van dié te identifiseer wat van so 'n belang is dat hulle verder geondersoek word gedurende die Omgewingsinvloedbeoordeling (OIB) Fase. Die OIB Fase volg op die Omvangsbepalings Fase in die proses.

Die verslag behels ook inligting oor die volgende:

- Die identifisering van uitvoerbare alternatiewe aangaande die projek;
- Kommentaar en kommernisse ingedien tot op hede deur belanghebbenes;
- Die Studieplan vir die OIB wat die wyse uiteensit vir hoe die proses uitgevoer gaan word; en
- Die opdragte aan die spesialiste wat gedurende die OIB Fase hulle insette sal lewer.

Hierdie brief dien as 'n uitnodiging aan u om die tweede Openbarevergadering by te woon, op 13 Junie 2005 by die Mosselbaai Biblioteeksaal te Marshstraat 99 in Mosselbaai. Die vergadering sal bestaan uit 'n aanbieding teen 15:00, wat herhaal sal wees teen 18:00, met deurgaans geleentheid vir bespreking. Die doel van die vergadering is om die Voorlopige Omvangsbepalingsverslag voortelê, navrae en kommernisse aantespreek en kommentaar aanteteken. Die kommentare en kommernisse sal in die dokumentasie weergespieël word soos die proses vorder. Die Voorlopige Omvangsbepalingsverslag kan besigtig word vanaf 3 Junie 2005 by die Mosselbaai en D'Almeida Biblioteke, sowel as by die webwerf www.eskom.co.za/eia. Die kommentaar tydperk vir die Omvangsbepalings Fase sluit teen 23 Junie 2005.

Die uwe
NINHAM SHAND


KAMAL GOVENDER
Omgewingskundige


BRETT LAWSON PrSciNat
Projekbestuurder

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RAAD VAN NINHAM SHAND (EDMS) BPK
B Tsita (nie-Uitvoerende Voorzitter)
AW Möhr (Besturende Direkteur)
AHM Gärrens
JD Pretorius
KC Simon

Geregistreerde Firma
SA Vereniging van Raadgewende Ingenieurs

ISO 9001 : 2000 Gesertifiseerd

ONS SKEP 'N BETER MÔRE VANDAG

ANNEXURE 10: DRAFT PLAN OF STUDY FOR EIR



In association with



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

Plan of Study for EIR

MAY 2005

Eskom Holdings Ltd.

Eskom Transmission

Tel: (011) 800 5111

Fax: (011) 800 3111

Eskom Generation

(011) 800 3501

(011) 800 5140

Megawatt Park
Maxwell Drive
Sandton
2199
Gauteng
South Africa



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

Plan of Study for EIR

1 BACKGROUND TO THE STUDY¹

An annual growth of approximately 3% in electricity demand has prompted Eskom to assess various electricity supply options. Open Cycle Gas Turbines (OCGTs) have been identified as a mean of providing peaking capacity to meet projected electricity shortfalls by 2007. The reason for this is that they can be constructed within the required time frame and that they can begin generating electricity within 30 minutes of start-up, making it the ideal technology to supply increased electricity demand in the mornings and evenings (peaking capacity).

Mossel Bay has been identified as one of two sites in the Western Cape where it is proposed to construct an OCGT power plant. The OCGT power plant comprises a fuel supply pipeline from the PetroSA facility to the power plant, a substation at the OCGT power plant and two transmission lines to transfer electricity from the OCGT substation to the Proteus substation (and hence the national grid).

The proposed activities trigger the Environment Conservation Act (ECA) (No. 73 of 1989) and accordingly authorisation is required from the competent environmental authority. Consequently, Ninham Shand and the environmental team were appointed by Eskom to undertake the legislated Environmental Impact Assessment (EIA) process outlined in Regulation R 1183 of the ECA.

The EIA process commenced in February 2003 and the Plan of Study for Scoping was submitted on 8 April 2005. Due to the fact that the proponent is a national body and the proposed project would have effects that cross provincial boundaries, the competent authority is the national Department of Environmental Affairs and Tourism (DEAT). However DEAT is presently attending to the delegation of authority to the provincial department of Environmental Affairs and Development Planning (DEA&DP), George office. For the remainder of this EIA process, DEA&DP will be the competent environmental authority.

The first phase of the EIA process, the Scoping Phase, culminates in the production of a Draft Scoping Report which identifies the array of potential environmental impacts and project alternatives which require more detailed investigation. This draft report also contains the draft Plan of Study for EIR (PoSEIR), allowing the public to comment on the scope of work envisaged for the second phase of the EIA process,

¹ Detailed background information is provided in the Scoping Report and accordingly only the essential elements are reiterated here.

i.e. the EIR Phase. In reviewing the Final Scoping Report, DEA&DP will also review the final PoSEIR.

2 PURPOSE OF THIS PLAN OF STUDY FOR EIR

This PoSEIR has been compiled in terms of the DEAT “*Guideline Document for the Implementation of Sections 21, 22 and 2 of the Environment Conservation Act*” (April 1998) and its purpose is to ensure that the next phase of this EIA process satisfies the requirements of DEAT and the provincial DEA&DP.

At this point, it may be pertinent to clarify the terminology used in the current EIA process:

- The overall process is referred to as the Environmental Impact Assessment or EIA process;
- This process is composed of three phases:
 - The Initial Application Phase;
 - The Scoping Report Phase; and
 - The Environmental Impact Report or EIR Phase

This PoSEIR outlines the anticipated process and products for the EIR Phase of the EIA process.

3 THE PLAN OF STUDY FOR EIR

3.1 DESCRIPTION OF THE ACTIVITY

The nature of the activity is described in detail in the Scoping Report, but in brief it includes the following:

- An OCGT power plant;
- Fuel supply pipeline;
- Substation; and
- Two transmission lines.

3.2 DESCRIPTION OF TASKS TO BE PERFORMED

3.2.1 Potential Environmental Impacts Identified during Scoping

The Scoping investigation has reviewed the full range potential environmental impacts associated with the proposed activities. Based on the Scoping investigation, input from the authorities and Interested and Affected Parties (I&APs), an array of potentially significant environmental impacts were identified for further and more detailed investigation during the EIR phase. Specifically the following potential environmental impacts have been identified:

- Impacts on flora;
- Impacts on avifauna;
- Impacts on air quality;
- Impacts of water consumption;
- Effluent impacts;
- Impact on traffic and access;
- Noise impacts;
- Socio-economic impacts;
- The impacts of existing infrastructure
- Visual impacts; and
- Impacts on heritage resources.

3.2.2 Method for Assessing the Significance of Potential Environmental Impacts

This section outlines the proposed method for assessing the significance of the potential environmental impacts outlined above. As indicated, these include both operational and construction phase impacts.

For each impact, the EXTENT (spatial scale), MAGNITUDE and DURATION (time scale) would be described. These criteria would be used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the EIR would represent the full range of plausible and pragmatic measures but does not necessarily imply that they would be implemented.²

The tables on the following pages show the scale used to assess these variables, and defines each of the rating categories.

² The proponent will be requested to indicate at the Draft EIR stage which mitigation measures they are prepared to implement.

Table 1: Assessment criteria for the evaluation of impacts

| CRITERIA | CATEGORY | DESCRIPTION |
|---|----------------------------|--|
| Extent or spatial influence of impact | Regional | Beyond a 7 km radius of the OCGT power plant and associated infrastructure |
| | Local | Within a 7 km radius of the OCGT power plant and associated infrastructure |
| | Site specific | On site or within 100 m of the OCGT power plant and associated infrastructure |
| Magnitude of impact (at the indicated spatial scale) | High | Natural and/ or social functions and/ or processes are <i>severely</i> altered |
| | Medium | Natural and/ or social functions and/ or processes are <i>notably</i> altered |
| | Low | Natural and/ or social functions and/ or processes are <i>slightly</i> altered |
| | Very Low | Natural and/ or social functions and/ or processes are <i>negligibly</i> altered |
| | Zero | Natural and/ or social functions and/ or processes remain <i>unaltered</i> |
| Duration of impact | Construction period | Up to 18 months |
| | Medium Term | 0-10 years (after construction) |
| | Long Term | More than 10 years (after construction) |

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. The means of arriving at the different significance ratings is explained in Table 2.

Table 2: Definition of significance ratings

| SIGNIFICANCE RATINGS | LEVEL OF CRITERIA REQUIRED |
|----------------------|--|
| High | <ul style="list-style-type: none"> High magnitude with a regional extent and long term duration High magnitude with either a regional extent and medium term duration or a local extent and long term duration Medium magnitude with a regional extent and long term duration |
| Medium | <ul style="list-style-type: none"> High magnitude with a local extent and medium term duration High magnitude with a regional extent and construction period or a site specific extent and long term duration High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term Low magnitude with a regional extent and long term duration |
| Low | <ul style="list-style-type: none"> High magnitude with a site specific extent and construction period duration Medium magnitude with a site specific extent and construction period duration Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term Very low magnitude with a regional extent and long term duration |
| Very low | <ul style="list-style-type: none"> Low magnitude with a site specific extent and construction period duration Very low magnitude with any combination of extent and duration except regional and long term |
| Neutral | <ul style="list-style-type: none"> Zero magnitude with any combination of extent and duration |



Once the significance of an impact has been determined, the PROBABILITY of this impact occurring as well as the CONFIDENCE in the assessment of the impact would be determined, using the rating systems outlined in Tables 3 and 4 respectively. It is important to note that the significance of an impact should always be considered in concert with the probability of that impact occurring.

Table 3: Definition of probability ratings

| PROBABILITY RATINGS | CRITERIA |
|------------------------|---|
| Definite | Estimated greater than 95 % chance of the impact occurring. |
| Highly probable | Estimated 80 to 95 % chance of the impact occurring. |
| Probable | Estimated 20 to 80 % chance of the impact occurring. |
| Possible | Estimated 5 to 20 % chance of the impact occurring. |
| Unlikely | Estimated less than 5 % chance of the impact occurring. |

Table 4: Definition of confidence ratings

| CONFIDENCE RATINGS | CRITERIA |
|--------------------|--|
| Certain | Wealth of information on and sound understanding of the environmental factors potentially influencing the impact. |
| Sure | Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact. |
| Unsure | Limited useful information on and understanding of the environmental factors potentially influencing this impact. |

3.2.3 Need for Additional Information: Specialist Studies

In discussion with the proponent, authorities and I&APs, several impacts have been identified as being of particular concern. Accordingly, specialists have been appointed to undertake the following studies:

- Botanical impact assessment;
- Avifaunal impact assessment;
- Noise impact assessment;
- Air quality, water use and effluent impact assessment;
- Visual impact assessment;
- Socio-economic impact assessment; and
- Heritage impact assessment.

The Terms of Reference (TOR) for these specialist investigations are detailed below. As a consequence, I&APs have the opportunity to comment on the various TORs.



3.2.3.1 *Specialist Botanical impact assessment*

The specialist botanical investigation will assess the relative impact of the various alternatives being considered on the floral communities. The ToR for this specialist botanical investigation would be as follows:

- Attend a one-day site inspection on Wednesday 23 February 2005 (completed).
- Source and review baseline information and participate in the finalisation of the ToR.
- Undertake a second site visit and compile a report which reflects the following³:
 - Broad description of the ecological characteristics of the site and surrounds;
 - Identification and description of biodiversity pattern at community and ecosystem level (main vegetation type, plant communities in vicinity and threatened/vulnerable ecosystems), species level (Red Data Book species) and in terms of significant landscape features (e.g. wetlands) and presence of alien species;
 - General comment on whether biodiversity processes would be affected;
 - Significance of potential impacts and recommendations to prevent or mitigate these;
 - Ranking in terms of flora impact severity of the transmission line route alternatives in particular; and
 - Indicating the salient elements of the report on a map to be provided by Ninham Shand.

Nick Helme of Nick Helme Botanical Surveys has been appointed to undertake the botanical impact assessment.

3.2.3.2 *Avifaunal impact assessment*

The avifaunal impact study will assess the potential impacts on birds in the area, to determine whether the proposed alternative transmission line routes will pose particular risks. The study would entail attending to the following:

- General description of the occurrence and status of birdlife in the study area;
- Description of avifaunal habitats likely to be affected;

³ 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.

- Identification of rare or endangered species occurring in the study area;
- Assessment of potential interactions between identified bird species per transmission line alternative and affected habitat; and
- Provide a report capturing the above and including recommendation to mitigate possible impacts on birdlife.

Brett Lawson of Ninham Shand will undertake the specialist avifaunal study.

3.2.3.3 *Noise impact assessment*

The purpose of this study is to assess the noise impacts of the proposed activities. The study is to be conducted in accordance with Section 7 of the South African National Standard (SANS) 10328 "Methods for environmental noise impact assessments". The noise impacts will be assessed in terms of:

- South African Noise Control Regulations of the Environment Conservation Act, No. 73 of 1989.
- World Health Organisation - Guidelines for Community Noise.
- World Bank - Environmental Guidelines.
- Environmental Protection Agency, United States of America.

The specialist noise investigation would entail the following tasks:

- Determination of the land use zoning and identification of all potential noise sensitive sites that could be impacted upon by activities relating to operation of the proposed OCGT power plants at Atlantis and Mossel Bay;
- Identification of all noise sources relating to the activities of the OCGT power plants during construction and operation, and that could potentially result in a noise impact at the identified noise sensitive sites;
- Determination of the sound emission, operating cycle and nature of the sound emission from each of the identified noise sources. Representative sound measurements are required to be recorded in the vicinity of the proposed sites during different times of day and night. It is estimated that at least two and possibly three days will be needed – assuming acceptable weather conditions. Weather conditions play a deciding factor in the measurement of sound at outdoor sites since sound measurements can only be conducted when wind speeds do not exceed 5m/sec;
- Calculation of the combined sound power level due to the sound emissions of the individual noise sources;
- Calculation of the expected rating level of sound at the identified noise sensitive sites from the combined sound power level emanating from identified noise sources;

- Determination of the existing ambient levels of noise at identified noise sensitive sites by conducting representative sound measurements;
- Determination of the acceptable rating level for noise at the identified noise sensitive sites;
- Calculation of the noise impact at identified noise sensitive sites;
- Assessment of the noise impact at identified noise sensitive sites in terms of SANS 10328; the South African Noise Control Regulations; the World Health Organisation; the World Bank and the Environmental Protection Agency, United States of America;
- Investigation of alternative noise mitigation procedures, if required, in collaboration with the design engineers of the OCGT plants and estimation of the impact of noise upon implementation of such procedures;
- Preparation and submission of a noise assessment report containing the procedures and findings of the investigation; and
- Preparation and submission of recommended noise mitigation procedures as part of a separate environmental noise management and monitoring plan.

Adriaan Jongens of Jongens Keet Associates has been appointed to undertake the noise impact assessment.

3.2.3.4 *Air quality assessment*

The purpose of the air quality assessment is to provide input regarding the implications of air pollution impacts that may result from the proposed OCGT power plant and associated infrastructure at Mossel Bay.

The proposed methodology should follow the general requirements typically associated with an EIA. These tasks include the following:

- The Establishment of the Baseline:
 - Description of the atmospheric dispersion potential of the area based on available meteorological data.
 - Characterisation of the existing status of air quality based on any available air quality monitoring data.
 - Provide an overview of legislative and regulatory requirements pertaining to atmospheric emissions and ambient air quality, including local and international air quality guidelines and standards.

- Predicted Impacts Arising from the Proposed Plant:
 - The compilation of a comprehensive emissions inventory including process and fugitive emissions. The impact assessment would consider, as a minimum, airborne particulates (inhalable and total suspended particles), oxides of nitrogen, carbon monoxide, sulphur dioxide, unburnt organic compounds, carbon dioxide (greenhouse gas) and any odorous compounds. Where possible, engineering estimates would be used (based on similar installations). Alternatively, international emission factors would be employed which are based on gas (distillate) firing rates. Fugitive emissions include both gaseous (diffuse sources) and particulate compounds. Although only expected to be significant during the construction phase, fugitive dust emission sources include vehicle-entrained dust, earthworks, stockpiles, material transfer and general exposed areas.
 - Preparation of meteorological parameters suitable for the theoretical construction of a wind field and atmospheric dispersion. Hourly average wind speed, wind direction and ambient air temperatures for five years would be prepared for this purpose.
 - Atmospheric dispersion modelling of estimated emissions to determine resultant highest hourly, highest daily and annual average air pollutant concentrations in the vicinity of the proposed plant. The impact would be based on ground level predictions, including both air concentrations and deposition. Gas deposition would include both wet (fog) and dry. The following scenarios would be included:
 - Construction emissions;
 - Routine and upset emissions during normal operation;
 - Emissions during shutdowns; and
 - Effects of mitigation measures e.g. optimum stack height and other engineering options.
 - Impact assessment (incremental and cumulative) of the predicted air concentrations including:
 - Compliance checks with local ambient air requirements, including local authorities, DEAT and South African Standards.
 - Health risk assessment using internationally peer-reviewed risk criteria (typically, the World Health Organisation, US Environmental Protection Agency [IRIS], Agency for Toxic Substances and Disease Registry [ATSDR] and Health Canada).

- Emission compliance check with local and international requirements (e.g. World Bank).
 - Impact Assessment Rating in terms of Magnitude, Significance, Frequency of Occurrence, Duration and Probability.
 - Preparation of emission and ambient air monitoring programme.
 - Compilation of a comprehensive report in which the methodological approach and assumptions and uncertainties used are documented and the findings of the study presented.

Key deliverables from this specialist study would include recommendations regarding mitigation measures to reduce/ control emissions, as input into the technical design process, and guidance with respect to the development of an air monitoring protocol for inclusion in the EMP. The following general procedure would be used to develop the EMP:

- Focus on Sources and Pollutants identified as significant in the EIA.
- Using emission limits and air quality guidelines, criteria and targets contained in the EIA, develop Key Performance Indicators for both air quality and emissions.
- All mitigation measures and good housekeeping measures to be associated with each source and pollutant.
- Develop a pro-forma monitoring programme, including procedures, responsibilities and reporting formats (both internal and external).
- Incorporate preliminary cost estimates

The air quality impact assessment will be undertaken by Lucian Burger of AirShed Planning Professionals/ Ilitha Riscom

3.2.3.5 *visual impact assessment*

The study is intended to assess the visual impact of the proposed OCGT units to be constructed on the PetroSA site in Mossel Bay and the transmission lines to connect the turbine units to the national grid at Proteus substation. The ToR for the specialist is as follows:

- Describe the existing visual characteristics of the site and its surroundings including any geology/landform features that influence them.

- Describe the visual significance of the area in terms of its history and present utilisation.
- Fully describe the proposed development.
- Determine the potential visual risks and opportunities presented by the proposed development.
- Determine the entire area from which the various elements of the proposed development will be visible (i.e. the viewshed.)
- Determine the important viewpoints from which the development will be visible and determine the nature of the visual impacts at these points.
- Prepare graphics that will aid the process of the assessment, (e.g. simulations of the development superimposed, to scale, on photographs taken from important viewpoints.)
- Assess the significance of the visual impact of the proposed development in terms of its scale, type, and character, including services and any ancillary structures pertaining to the development etc.
- Propose possible mitigation measures to minimise visual impact including changes to the design, alternative finishes and visual screening.
- Propose monitoring and review measures that will ensure long-term maintenance of visual standards.

The visual impact assessment will be undertaken by Tanya de Villiers of Chittenden Nicks de Villiers.

3.2.3. *Socio-economic assessment*

The socio-economic specialist will comment on the proposed site location in terms of the potential economic impacts and its suitability in terms of identified economic criteria.

The input will also involve a baseline study, which will comprise of a comparative analysis of the different identified routes for the transmission lines.

As part of this task, the specialist will develop a checklist of possible economic criteria. Examples of such criteria include the following:

- Supply of electricity to the community
- Creation of job opportunities
- The sterilization of agricultural land
- The impact of tourism activities
- Potential loss in income
- Potential socio-economic impacts

The specialist will develop an economic score card, which will rate the different routes according to the economic criteria determined as part of this task. The findings from the economic score card will provide a preferred route along which to develop the transmission lines based on economic principals.

The socio-economic assessment will be undertaken by Alex Kempthorne of Urban-Econ.

3.2.3.7 *eritage impact assessment*

The specialist will assess the potential impacts of the proposed activities on heritage resources. The heritage impact assessment will entail the following:

- Attend a one-day site inspection on Wednesday 23 February 2005 (completed).
- Review information and participate in the finalisation of the ToR.
- Undertake a heritage study that is reflected in a Heritage Statement.

The Heritage Statement will comprise the following:

- A problem statement, in terms of where, why and how heritage resources may be impacted on;
- A description of the affected environment;
- Expected impacts related to the site and route selection in general; and
- A ranking in terms of heritage impact severity of the transmission line route alternatives in particular.

Tim Hart of the Archaeological Contracts Office at UCT will undertake the heritage impact assessment.

3.2.4 Reasonable Project Alternatives Identified during Scoping

The Scoping investigation has reviewed the full range of project alternatives associated with the proposed activities. Based on input from authorities and I&APs, an array of reasonable project alternatives has been identified for further, more detail investigation during the EIR phase, namely:

- Alternative alignments of the transmission lines from the proposed OCGT site to the Proteus substation:
 - A straight-line route;
 - A route that follows the R327; or
 - A route that follows the railway line and an existing 66kV powerline alignment through a valley (Myn se Kloof) leading to Proteus substation.

- Alternative tower designs;
- Alternative fuel supply pipeline alignments from the PetroSA facility to the proposed OCGT power plant:
 - Along the existing railway line; or
 - A route that runs between the existing PetroSA construction camp and landfill site along the existing 132Kv transmissionline to the proposed OCGT power plant.
- Alternative access road routes:
 - A route that runs from the N2, between the landfill site and PetroSA facility, then westward (passing immediately north of the landfill site) toward the proposed OCGT power plant along the alignment of the existing 132kV transmission line; or
 - A route that runs from the N2, between the land fill site and PetroSA facility, northward to the existing railway line. Thereafter the access road would run westward along the railway line to the proposed OCGT power plant.
- Alternative processes:
 - Using water for abatement of NOx emissions; or
 - NOx abatement without the use of water.
- The exact orientation on the OCGT power plant and substation within the identified site.

3.2.5 Public Participation Process

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

3.2.5.1 *Public Comment on the Draft EIR*

Following the completion of the Draft EIR (refer to Section 3.2.6 below), it will be lodged at the Mossel Bay public library and on the Eskom website (www.eskom.co.za/eia). Registered I&APs will be notified of the lodging by means of letters, and given a three-week period in which to comment on the report. During the comment period, a public meeting would be held to enable I&APs to provide feedback on the draft report. The public meeting would be advertised in the local media and in the same letters used to inform the I&APs of the release of the Draft Report.

The public comments would be consolidated into an Annexure of the EIR. This would take the form of an issues trail, which would summarise the issues raised and provide responses thereto. The draft report would also be revised in light of feedback from the public.

3.2.5.2 *Opportunity for Appeal*

All registered I&APs would be notified in writing of the release of the Record of Decision by DEA&DP. They would be reminded of their right to appeal against DEA&DP's decision to the provincial Minister, in terms of the Environment Conservation Act.

3.2.6 The Environmental Impact Report

The purpose of the EIR would be to undertake a comparative assessment of the significance of the potential environmental impacts of the project alternatives. The EIR would thus include the following:

- A brief overview of the potential environmental impacts and reasonable alternatives identified during the Scoping investigation.
- A summary of the key findings of the various specialist studies as they pertain to the affect environment.
- An overview of the public participation process conducted during the compilation of the EIR.
- A detailed assessment of the significance of the potential environmental impacts for the various project alternatives. This assessment, which would use the methodology outlined in Section 3.2.2, would be informed by the findings of the specialist studies, professional judgement and comment from the various I&APs.
- An overview of the full range of mitigation measures including an indication of how these would influence the significance of any potential environmental impacts. These mitigation measures would be informed by the specialist studies, professional experience and comment received from the I&APs.
- A construction phase Environmental Management Plan (EMP) to minimise the impacts of the construction phase.
- A generic operational phase EMP, which would set environmental guidelines for the operation phase of the proposed OCGT power plant and associated infrastructure.

3.3 PROPOSED PROGRAMME

The Scoping Report is due to be submitted to DEA&DP on 30 June 2005, after a public forum to be held on 13 June 2005. The Scoping Report will include this plan of study.

The Draft EIR will be released at the end of August 2005 and the final public forum is due on 14 September 2005. Submission of the finalised EIR is due on 10 October 2005.

4 PERSONNEL

4.1 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 and review 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.

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. Andrew will play a key 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 from 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.

4.2 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, 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.

4.3 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 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.

4.4 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 assessment.

4.5 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.

4.6 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.

4.7 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.

4.8 ARCHAEOLOGY CONTRACTS OFFICE

Tim Hart has been involved in a wide range 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.

4.9 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 CVs are available on request.

REPORT DISTRIBUTION CONTROL-SHEET

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PROJECT NUMBER: 400850
REPORT TITLE: Draft Scoping Report
REPORT NUMBER: 3907/ 400850
DATE: 30 June 2005

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