

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA)  
DEAT REFERENCE NO.: 12/12/20/944**

**FOR THE PROPOSED ESKOM NUCLEAR POWER STATION AND  
ASSOCIATED INFRASTRUCTURE**

**FOCUS GROUP MEETING  
COEGA DEVELOPMENT CORPORATION  
AND NELSON MANDELA BAY MUNICIPALITY  
31 AUGUST 2007**

## PREFACE

The independent Environmental Impact Assessment (EIA) Project Team (“the EIA Team”) wishes to thank (a) Dr Peter Inman for coordinating this meeting and (b) all representatives of the Coega Development Corporation (CDC) and Nelson Mandela Bay Municipality who attended the Focus Group Meeting as part of the notification round of meetings for the EIA for the proposed Nuclear Power Station and associated infrastructure.

Should participants who attended the meeting require any changes to these proceedings, please notify the Public Participation Office in writing within two weeks of receipt.

In some instances the name of the stakeholder were not provided, and hence, these details are not captured in these proceedings. Should you as a participant recognise your input, it would be greatly appreciated if you could provide ACER (Africa) Environmental Management Consultants (ACER) with your details.

There are three sets of minutes:

- Set A - Public Meetings
- Set B - Key Stakeholder Workshops
- Set C - Various Focus Group Meetings (as requested by stakeholders)

All minutes are part of the public record and have been placed on the website [www.eskom.co.za/EIA](http://www.eskom.co.za/EIA) under the “Nuclear1” link. Should you wish to receive a specific set, kindly request them from the Public Participation Office.

These minutes have been:

**Compiled by:** ACER (Africa) Environmental Management Consultants  
**Reviewed by:** ARCUS GIBB (Pty) Ltd  
**Accepted by:** Eskom Holdings Limited, Generation and Enterprises Division

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## 1. ATTENDANCE

### 1.1 Attendance – Coega Development Corporation

Name	Position
Dr Peter Inman	Senior Business Development Manager
Mr Fezile Ndema	Project Manager
Mr Khwezi Tiya	Executive Manager: Business Development

### 1.2 Attendance – Nelson Mandela Bay Municipality

Name	Position
Mr Peter Neilson	Director: Projects
Mr George Ferreira	Executive Director: Electricity
Mr Malibongwe Fudu	Engineer

### 1.3 Attendance - Eskom Holdings Limited

Name	Organisation	Role in the project
Mr Tony Stott	Enterprises Division Nuclear Programmes	Senior Manager (Nuclear Stakeholder Management)

### 1.4 Attendance - Environmental Consulting Team

Name	Organisation	Role in the project
Ms Jaana-Maria Ball	ARCUS GIBB	EIA Project Manager
Ms Bongji Shinga	ACER (Africa)	Public Participation Consultant

## 2. WELCOME AND INTRODUCTIONS

Dr Peter Inman, of the Coega Development Corporation (CDC) welcomed all present and thanked them for attending the meeting to discuss the proposed Eskom Nuclear Power Station (NPS).

Ms Jaana-Maria Ball, EIA Project Manager introduced the EIA Team members and the Eskom representative.

### **3. OBJECTIVES OF MEETING**

The primary objectives of the meeting were as follows:

- To introduce and provide the CDC and Nelson Mandela Bay Municipality's (NMBM) with an overview of the proposed development by Eskom and to introduce the EIA Team and the relevant Eskom personnel.
- To provide an opportunity for Interested and Affected Parties (I&APs) to comment, ask questions and raise issues to be addressed by Eskom and the EIA Team. This includes identification of issues and concerns for inclusion in the Draft Scoping Report (DSR).
- To undertake constructive debate and discussion.

Dr Inman outlined the CDC and NMBM objectives of the meeting as follows:

- Confirm the CDC and NMBM interest for a rapid implementation of the proposed NPS (i.e. Nuclear 1) project.
- Establish and identify support required by Eskom in implementing the proposed NPS.
- Prioritisation of Thyspunt Site as a potential site for Nuclear 1.

### **4. ESKOM'S STRATEGIC OVERVIEW - PRESENTATION**

*The summary of the information presented is provided below. The issues raised and discussed following each presentation are summarised in Appendix 1.*

Mr Tony Stott, Senior Manager, Nuclear Stakeholder Management, Eskom Enterprises Division presented a strategic overview. The following sections were covered in the presentation:

- Overview of electricity demand and supply in South Africa
- Primary energy resources and technological options for South Africa
- Major strategic drivers for nuclear power
- The proposed Nuclear-1 NPS

#### **4.1 Overview of electricity demand and supply in South Africa**

- From the 1980s through to early 2000s, the growth in demand for electricity followed a trend averaging between 2 and 3 % per annum. However, over the past few years the annual growth in peak demand for electricity has been higher than an average of 4 % per annum.
- The Government's Accelerated and Shared Growth Initiative for South Africa (ASGISA) is aiming for the economy to grow by approximately 6 % per annum into the future. An annual growth of 6 % in the economy implies an annual growth of approximately 4 % in the demand for electricity.
- Eskom planning into the future is therefore based on an average annual growth rate in the demand for electricity capacity of 4 %.
- In 1980, the demand for electricity, the peak demand, was below 20 000 MW. The peak demand has continued to increase compared to previous years; this year the peak demand was just over 36 000 MW (the peak demand was recorded on 5 July 2007 at 36 513 MW).

- At 4 % annual growth in the demand for electricity, the peak demand will increase to just below 80 000 MW by 2025.
- Eskom's net electricity generating capacity is currently just below 40 000 MW. In addition Eskom imports approximately 1000 - 1500 MW of electricity capacity from Cahora Bassa in Mozambique (less when maintenance or repairs are being undertaken at Cahora Bassa or on the transmission lines between Cahora Bassa and South Africa). Eskom will thus need to have added more than 40 000 MW of new power stations to its existing electricity generating capacity in order to be able to meet the projected demand for electricity in 2025.
- Power stations do not last forever. They are maintained, and components can be repaired or replaced when necessary, but eventually it is no longer economically viable to operate, and it becomes more cost effective to shut down the old power station and construct a new power station. Hence in addition to meeting the projected demand, Eskom also needs to prepare for the replacement of power stations that will reach the end of their economic life span after approximately 2025.
- The challenge is to correctly match the supply and demand; economic growth and development will be hampered if the supply of electricity does not match the demand.
- Choosing the best options for electricity generation and the planning for the construction of new power stations must also consider the different types of power stations that are required and their cost (which impacts on the price of electricity), the time taken to construct them, the environmental considerations and their operating characteristics. The total demand for electricity in South Africa is not constant; rather it varies on a 24-hour basis, with peak demand in the early morning and in the late afternoon / early evening. To optimally meet the total demand, it is thus necessary to have both "base load" electricity generating power stations designed specifically to generate electricity continuously at all hours, as well as "peaking" electricity generating power stations designed specifically to generate electricity only during the periods of peak demand. This is achieved by harnessing different energy sources and applying different technologies.
- In South Africa, coal and nuclear power is used for base load electricity generation, while the open cycle gas turbines (using liquid fuel, such as diesel), the two small hydro electric power stations on the Orange River, and pumped storage schemes, are used for peaking and emergency electricity generation.
- In October 2004, the South African Cabinet took the decision that Eskom will be responsible for at least 70 % of the new electricity generating capacity that is required, with Independent Power Producers being responsible for the remaining 30 %.

#### 4.2 Primary energy resources and technological options for South Africa

- **Coal** is the primary energy source for electricity generation in South Africa - approximately 90 % of electricity generation in South Africa is derived from coal-fired power stations. Eskom coal-fired power stations are specifically designed to burn low-grade coal, which otherwise would not be utilised and would be a waste product emanating from the coal mines. South Africa has significant coal resources and hence coal will continue to be used in the future. However, using coal to generate electricity also has its disadvantages: the transportation of coal is very expensive and hence coal-fired power stations are located as close to the mines as possible to maintain their economic viability - this implies that coal-fired power stations are located inland and hence, if wet-cooled, use considerable quantities of scarce water resources, or if dry-cooled are less efficient and still use quantities (although much less) of scarce water resources; the burning of coal gives rise to pollutants – in particular the burning of coal gives rise to

emissions of carbon dioxide (CO<sub>2</sub>), a greenhouse gas, which contributes to climate change. Eskom continues to monitor and investigate the progress internationally with the commercialisation of more efficient coal-fired power stations. Eskom is also researching underground coal gasification as a means to generate electricity from coal – a pilot facility is being established in Mphumalanga Province near the Majuba coal-fired power station. Eskom also monitors and participates in international forums investigating the possibility of capturing and storing carbon dioxide emissions.

- **Gas:** South Africa's indigenous resources of natural gas are currently not available in sufficient quantities to fuel power stations – hence the South African Open Cycle Gas Turbines use liquid fuel (e.g. diesel). The Open Cycle Gas Turbines are used to help meet the demand for electricity during peak and emergency demand situations since they are very expensive to operate (the diesel price is linked to the dollar price of oil and is also subject to foreign exchange rates). In 2006/7 Eskom constructed two new Open Cycle Gas Turbines in the Western Cape Province, viz. Ankerlig power station at Atlantis, and Gourikwa power station at Mossel Bay, with a combined capacity of just over 1000 MW. Eskom has submitted the necessary environmental and other applications to extend these two power stations by an additional total 1000 MW. Eskom is continuing to investigate being able to access natural gas from the Kudu gas fields in Namibia, the Ibhubesi gas fields off the west coast of South Africa, the gas fields in Mozambique and liquid natural gas from international markets, to generate electricity in combined cycle gas turbine power plants. If sufficient natural gas becomes economically available (the gas price is also linked to oil prices and subject to foreign exchange rates), the possibility exists to convert the new Open Cycle Gas Turbines to combined cycle gas turbines.
- **Renewable energy: Hydro power:** South Africa is a water scarce country and does not have large rivers for hydro power. Eskom has two hydro power stations on the Orange River, the 360 MW (4 units each 90 MW) Gariep power station and the 240 MW (2 units each 120 MW) Vanderkloof power station. The use of these two stations is restricted to peak and emergency electricity demand situations, subject to the availability of water in the Gariep and Vanderkloof dams. Investigations are in progress for an upgrade at Gariep power station.  
**Wind energy:** An EIA is currently in progress for a wind energy facility of 100 MW on the West Coast of South Africa (near Vredendal). Wind energy is an important complement to other forms of electricity generation. Since the wind does not blow continuously, and since, apart from pumped storage schemes which use more electricity than what they produce, large scale storage of electricity is not yet possible, wind energy cannot be relied upon for neither base load nor peaking or emergency electricity generation.  
**Solar energy:** An EIA has been undertaken and an environmental impact report has been submitted to the Department of Environmental Affairs and Tourism (DEAT) for a research and demonstration project for a concentrated solar thermal plant of 100 MW near Upington. Mirrors reflect the sunlight onto a central point. The project aims to research and demonstrate the heating of a molten salt at the central point in an intermediate step before boiling water and creating steam to drive a turbine and generate electricity. In principle the molten salt would retain its heat and hence be able to boil water and create steam after the sun is no longer shining. If all the necessary approvals are obtained, Eskom could start construction of the solar thermal plant in 2008/9. If constructed, it would be the biggest facility of its design in the world.
- **Efficiency programme:** Eskom is continuing to investigate ways to improve the use of electricity. Eskom has a demand-side management and energy efficiency programme target of 3 000 MW by 2012 and 8 000 MW by 2025. 8 000 MW is equivalent to avoiding the construction of two large coal-fired power stations.

- **Importing electricity via the transmission network:** Eskom already imports electricity from neighbouring countries, primarily from the Cahora Bassa Hydro Electric Power Station in the northern part of Mozambique. Between 1000 and 1500 MW hydro power capacity is imported from Cahora Bassa, although some of this (about 300 MW) is sent back to the Southern part of Mozambique via South Africa. Eskom is participating in a project to harness the hydro power potential of the Inga Falls on the Congo River in the Democratic Republic of Congo. This is a long term project which includes the construction of a very long transmission line from the DRC, through Angola and Namibia into South Africa and Botswana. So as not to become over-dependent on our neighbouring countries for electricity, Eskom will limit the import of electricity.
- **Nuclear:** South Africa is rich in uranium resources which can be used to generate electricity in nuclear power stations. Eskom is thus investigating expanding its nuclear power generation capacity to help meet the future demand for electricity.

It is Eskom's stance that ALL of these primary energy resources need to be harnessed using the appropriate technology to provide the electricity that South Africa requires to support its economic growth and development.

#### 4.3 Major strategic drivers for Nuclear

- Eskom needs new base load electricity generating capacity – only coal and nuclear power can at this stage provide base load capacity
- Climate Change and the contribution made by the burning of fossil fuels such as coal to this phenomenon are gaining an increasing amount of attention, both nationally and internationally. South Africa needs to reduce its emissions of greenhouse gases and nuclear power is one of the options for Eskom to achieve this objective.
- One advantage of nuclear power stations is that, unlike coal-fired power stations, they can be cost-effectively located away from the source of fuel, and hence can be located near the main economic growth centres. Currently, there is significant growth along the coast line (the Cape Town region in the Western Cape, the Port Elizabeth region in the Eastern Cape), and in the Upington/Sishen region in the Northern Cape. Locating power stations (of any kind) near the economic growth centres reduces the amount of electricity that has to be transmitted through the transmission network system and hence reduces the electricity losses incurred when transmitting electricity along long transmission lines.
- All thermal power stations need cooling of the steam used to drive the turbines. If located on the coast, they can use seawater for cooling and not scarce fresh water resources.
- If a coal-fired power station is located on the coast, Eskom would need to transport coal from the coal-fields in Mpumalanga or Limpopo Provinces to the areas where the power station is located, which is not economically viable. A large coal-fired power station of 3600 MW requires approximately 40 000 tons of coal per day when operating at full power. Assuming transportation by rail, that each train wagon can take a load of 80 tonnes, and that each train has 50 wagons, then 10 train loads of coal would need to travel from the coal fields and be off-loaded at the power station every day.
- A nuclear power reactor only requires to be refuelled once every 18 months with approximately 25 – 40 tonnes of fuel, depending on the size of the reactor. The fuel is easily transported to the nuclear power station from the factory where it is manufactured.
- South Africa has more than sufficient uranium deposits to meet the requirements for fuel for the proposed nuclear power station over its entire lifetime.

- ❖ Eskom requires 40,000 megawatts (MW) of additional electricity generating capacity to be constructed in phases over the next 20 years.
- ❖ The Eskom Board has approved the **investigation** of up to 20,000 MW of nuclear capacity by 2025. The other 20,000 MW will come out of other generation mixes, e.g. renewables, coal, gas etc.
- ❖ Eskom's target for savings associated with demand side management is 3,000 MW by 2012 and 8,000 MW by 2025. 8,000 MW is equivalent to two coal-fired power stations.

#### 4.4 Nuclear Technology Selection

- Koeberg NPS has been safely operating for the past 23 years. The two nuclear reactors at Koeberg are the Pressurised Water Reactor (PWR) technology.
- Eskom, the National Nuclear Regulator (NNR), and the local suppliers of maintenance services are familiar with PWR technology.
- Eskom investigated the different nuclear power station technologies available in the world for large scale power stations and has deemed it prudent to continue with the PWR technology.
- The PWR technology for the proposed nuclear power station would be a more advanced form compared to the technology used in the existing Koeberg NPS.

#### 4.5 Overview of the proposed nuclear power station infrastructure

A picture of a model of the Koeberg NPS and an aerial photograph of Koeberg were used to provide an overview of the infrastructure that would be required for the proposed nuclear power station. Some of the key features include the following characteristics:

- The footprint of the proposed nuclear power station is approximately 31 hectares.
- There are turbines, intake basin (uses sea water for cooling), administration buildings, transmission yard, engineering building, turbine hall (which consists of a turbine and generator), mechanical workshops, etc.
- Main security fence.
- Restricted area, which require permits to access.
- The conservation area, which is open to the public for recreational activities.

#### 4.6 Regulatory Processes (associated with the nuclear power station)

- The DEAT is the lead environmental authority for the EIA for the proposed power station. Provincial environmental departments of the Northern, Western and Eastern Cape are commenting authorities. Five different sites are being investigated as part of the EIA.
- Transmission lines are required between the proposed power station and the existing national transmission network to enable the electricity generated by the proposed power station to be fed into the national transmission network. Separate EIAs will be undertaken for the proposed transmission lines. The EIAs for the proposed transmission lines will be co-ordinated to align as close as possible to the EIA for the proposed NPS.

- An application for a nuclear installation licence will be submitted to the NNR in terms of the requirements of the National Nuclear Regulator Act. The NNR Act provides for the holding of public hearings.
- The NNR and DEAT will ensure that there is synergy between the Nuclear Licensing Process and Environmental Authorisation Process.
- An application to the National Energy Regulator of South Africa (NERSA) for an electricity generation licence will be made at the appropriate time.
- Zoning permits, water permits, disposal of domestic waste, and other authorisations will also be required. The respective applications to the relevant Authorities will be made at the appropriate time.

**If all necessary approvals are obtained, construction could start in 2009 or early 2010 with the first unit coming into operation in late 2016.**

## **5. DISCUSSION AND WAY FORWARD**

### **5.1 Discussion**

This section summarises the key points and actions arising from the discussion:

#### **5.1.1 Nelson Mandela Bay Municipality**

- Forward Council Resolution supporting Nuclear 1 at Thyspunt.
- Sensitise Eastern Cape political structures to project and obtain support.
- Contact PERCCI to obtain support of organized business.
- Contact COSATU to obtain support of organized labour.
- Continue to work with Eskom Transmission in relation to required power line servitudes.
- Provide assistance/support to Kouga Municipality as and when required (planning, utilities, infrastructure, etc.).
- Use opportunities for positive media messages to balance negativity of self-selecting opposition groups.
- Officials to attend future public meetings and comment on Draft Scoping Report (DSR).

#### **5.1.2 Coega Development Corporation**

- From the Industrial Development Zone (IDZ) perspective provide rationale for Nuclear 1 at Thyspunt (identify future energy intensive users).
- Engage PERCCI and COSATU and request support.
- Consider engaging Eastern Cape Legislature to request support.
- Sensitise Eastern Cape political structures to project and obtain support.
- Forward summary of latest International Panel for Climate Change consensus report.
- Assist with public empowerment process relating to understanding of key safety and health concepts.
- Provide assistance/support to Kouga Municipality as and when required (planning, utilities, infrastructure, etc.).
- Use opportunities for positive media messages to balance negativity of self-selecting opposition groups.

- Attend future public meetings and comment on the DSR.
- Contact South African Power Project (Mr Thulani Gcabashi) relating to localization opportunities.

### **5.1.3 EIA Team**

- Facilitate visit by NMBM and CDC to Koeberg.
- Advise NMBM and CDC when team requires additional information.
- Consider engagement with communities living in eastern and northern areas (Motherwell, etc.).
- Note requirement to align timing of various processes.

## **6. ISSUES AND COMMENTS RAISED AND DISCUSSED**

The table (**pages 12 - 23**) presented below details all issues and concerns which were raised and discussed at the meeting.

Please note:

- ACER has tried to capture and reflect as accurately as possible all issues raised and discussed at the meeting.
- Should you wish to edit your comments, please advise ACER within two weeks of receiving these minutes.

## APPENDIX 1: RECORD OF ISSUES RAISED AND DISCUSSED

**Note:** Should you as a participant at the meeting not agree to the way in which ACER has captured your issue, please submit your requested changes, in writing, within two weeks of receiving this document

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
1	Mr Khwezi Tiya Coega Development Corporation	Is uranium classified as a strategic resource in South Africa?	The Department of Minerals and Energy (DME) is planning to identify uranium as a strategic resource - reference the draft Nuclear Energy Policy and Strategy for the Republic of South Africa, recently released for public comment (available on the DME website <a href="http://www.dme.gov.za/energy/documents/stm">www.dme.gov.za/energy/documents/stm</a> )
2	Mr George Ferreira Nelson Mandela Bay Municipality	South Africa is one of the biggest contributors to CO <sub>2</sub> emissions.	<p>South Africa is a signatory to the Kyoto Protocol as a developing country. As such South Africa currently has no targets to reduce its GHG emissions. The Kyoto protocol is valid up to 2012. International negotiations for the period thereafter have recently commenced and hence no firm decisions have thus been made regarding future commitments.</p> <p>However, Eskom has taken the stance that South Africa will be required to reduce its GHG emissions and therefore Eskom has developed a climate change strategy which is focused on energy efficiency, reducing the demand for electricity and low CO<sub>2</sub> emitting technologies such as renewables and nuclear.</p>
3	Mr George Ferreira Nelson Mandela Bay Municipality	If South Africa has to start reducing CO <sub>2</sub> emissions, the equation will change significantly. Coal will no longer become the cheapest option.	Comment noted.

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
4	Dr Peter Inman Coega Development Corporation	It is important that people understand that if you are in the country where you have an increasing demand for electricity, one cannot supply the demand using wind or solar only. A need for a back up source either when the wind is not blowing, sun is not shining will always be needed.	Comment noted.
5	Mr George Ferreira Nelson Mandela Bay Municipality	<p>Would it not make sense to build Combined Cycle Gas Turbines (CCGT)?</p> <p>What is the rationale behind using Open Gas Cycle Turbines instead of Combined Cycle Gas Turbines?</p>	<p>South Africa's indigenous resources of natural gas are currently not available in sufficient quantities to fuel power stations – hence the South African Open Cycle Gas Turbines use liquid fuel (e.g. diesel). The Open Cycle Gas Turbines are used to help meet the demand for electricity during peak and emergency demand situations since they are very expensive to operate (the diesel price is linked to the dollar price of oil and also is subject to foreign exchange rates). In 2006/7 Eskom constructed two new Open Cycle Gas Turbines in the Western Cape Province, viz. Ankerlig power station at Atlantis, and Gourikwa power station at Mossel Bay, with a combined capacity of just over 1000 MW. Eskom has submitted the necessary environmental and other applications to extend these two power stations by an additional total 1000 MW.</p> <p>Eskom is continuing to investigate being able to access natural gas from the Kudu gas fields in Namibia, the Ibhubesi gas fields off the west coast of South Africa, the gas fields in Mozambique and liquid natural gas from international markets, to generate electricity in combined cycle gas turbine power plants.</p> <p>If sufficient natural gas becomes economically available (the gas price is also linked to oil prices and subject to foreign exchange rates), the possibility exists to also convert the new Open Cycle Gas Turbines to combined cycle gas turbines.</p>

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
6	Mr George Ferreira Nelson Mandela Bay Municipality	South Africa is a water scarce country, even if we were to use solar thermal for power generation, one would still need access to water for cleaning the mirrors.	Comment noted.
7	Mr Peter Neilson Nelson Mandela Bay Municipality	Suggested that Eskom compares renewables with realistic costs for power generation and not with the historical costs that do not use cleaner technologies.  As an example, we should compare real costs for nuclear/OCGT/CCGT with 30 cents per unit of electricity for the production of cleaner coal electricity generation and <u>not</u> 7-9 cents per unit of electricity.	Comment noted for consideration in the EIA
8	Dr Peter Inman Coega Development Corporation	If the NPS can go to Thyspunt what number of units are we looking at?	The maximum capacity for each site will be assessed and identified as part of the EIA. The EIA and nuclear licensing processes will determine the viability of each site. However, should all sites be found to be technically and environmentally feasible, all five sites in principle may be considered for use in the future.  The current EIA is only for one proposed NPS, with associated infrastructure, of the Pressurised Water Reactor (PWR) type technology. The proposed power station will either have two or three units, depending on which plant type is chosen
9	Mr Peter Neilson Nelson Mandela Bay Municipality	When would Eskom be in a position to start looking at cleaner power generation technologies?	It is Eskom's stance that ALL of the primary energy resources including solar, wind, wave, ocean current, tidal energy, biomass, hydro, gas, coal and nuclear need to be harnessed using the appropriate technology to provide the electricity that South Africa requires to support its economic growth and development.

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
			<p><b>Coal:</b> Eskom continues to monitor and investigate the progress internationally with the commercialisation of more efficient coal-fired power stations. Eskom is also researching underground coal gasification as a means to generate electricity from coal – a pilot facility is being established in Mphumalanga Province near the Majuba coal-fired power station. Eskom also monitors and participates in international forums investigating the possibility of capturing and storing carbon dioxide emissions.</p> <p><b>Gas:</b> Eskom is continuing to investigate being able to access natural gas from the Kudu gas fields in Namibia, the Ibhubesi gas fields off the west coast of South Africa, the gas fields in Mozambique and liquid natural gas from international markets, to generate electricity in combined cycle gas turbine power plants.</p> <p><b>Renewable energy: Hydro power:</b> South Africa is a water scarce country and does not have large rivers for hydro power. Investigations are in progress for an upgrade at Gariep hydro power station.</p> <p><b>Wind energy:</b> An EIA is currently in progress for a wind energy facility of 100 MW on the West Coast of South Africa (near Vredendal). Wind energy is an important complement to other forms of electricity generation. Since the wind does not blow continuously, and since, apart from pumped storage schemes which use more electricity than what they produce, large scale storage of electricity is not yet possible, wind energy cannot be relied upon for neither base load nor peaking or emergency electricity generation.</p> <p><b>Solar energy:</b> An EIA has been undertaken and an environmental impact report has been submitted to the DEAT</p>

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
			<p>for a research and demonstration project for a concentrated solar thermal plant of 100 MW near Upington. Mirrors reflect the sunlight onto a central point. The project aims to research and demonstrate the heating of a molten salt at the central point in an intermediate step before boiling water and creating steam to drive a turbine and generate electricity. In principle the molten salt would retain its heat and hence be able to boil water and create steam after the sun is no longer shining. If all the necessary approvals are obtained, Eskom could start construction of the solar thermal plant in 2008/9. If constructed, it would be the biggest facility of its design in the world.</p> <p><b>Efficiency programme:</b> Eskom is continuing to investigate ways to improve the use of electricity. Eskom has a demand-side management and energy efficiency programme target of 3 000 MW by 2012 and 8 000 MW by 2025. 8 000 MW is equivalent to avoiding the construction of two large coal-fired power stations.</p> <p><b>Importing electricity via the transmission network:</b> Eskom already imports electricity from neighbouring countries, primarily from the Cahora Bassa Hydro Electric Power Station in the northern part of Mozambique. Between 1000 and 1500 MW hydro power capacity is imported from Cahora Bassa, although some of this (about 300 MW) is sent back to the Southern part of Mozambique via South Africa. Eskom is participating in a project to harness the hydro power potential of the Inga Falls on the Congo River in the Democratic Republic of Congo. This is a long term project, which includes the construction of a very long transmission line from the DRC, through Angola and Namibia into South</p>

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
			<p>Africa and Botswana. So as not to become over-dependent on our neighbouring countries for electricity, Eskom will limit the import of electricity.</p> <p><b>Nuclear:</b> South Africa is rich in uranium resources, which can be used to generate electricity in NPS. Eskom is thus investigating expanding its nuclear power generation capacity to help meet the future demand for electricity.</p>
10	Mr Peter Neilson Nelson Mandela Bay Municipality	Wave power generation should be a priority on Eskom's agenda. There should be a way of getting generators to work under the ocean.	Wave power generation is one of the alternatives that Eskom is researching. There are, however, economic considerations that need to be taken into account. The technology is still been assessed from a technical and economic viability perspective.
11	Dr Peter Inman Coega Development Corporation	Coega is a preferred location for localisation and the government has confirmed this. Therefore, Coega will need to lobby with the government in support for a NPS in the Eastern Cape.	Comment noted.
12	Mr Khwezi Tiya Coega Development Corporation	Would like to receive detailed information on Eskom's research projects, alternative or new generation options.	Request noted and has been forwarded to Eskom
13	A Stakeholder	What has happened to the Pebble Bed Modular Reactor (PBMR)?	<p>The pebble bed modular reactor (PBMR) technology is being developed by the PBMR (PTY) Ltd company. In particular, a demonstration power plant is under development. Eskom has submitted applications for an environmental authorisation and for a nuclear installation licence for the PBMR demonstration power plant to be constructed on the Koeberg site. The EIA and nuclear licensing processes are in progress. If successful then Eskom will purchase from the PBMR (Pty) Ltd Company power stations that use the pebble bed</p>

No	NAME & ORGANISATION	COMMENT	RESPONSE OR ACTION
			modular reactor technology, subject to normal commercial and regulatory requirements (authorisations, licences, permits etc) being met.
14	Mr Fezile Ndema Coega Development Corporation	Has Eskom observed any difference in marine life due to change in water temperature at Koeberg?	<p>Independent studies conducted by the University of Cape Town, before Koeberg started operating and, which have been ongoing since the operating of the station have shown no adverse effects on the marine life in the area (records are available from the University). The outfall of Koeberg has been designed in such a way that the warmer water mixes with and cools down to the ambient sea water temperature within 500 – 1000 metres from the point of discharge into the sea.</p> <p>This is also one of the studies that will be undertaken in the EIA. Marine specialists are part of the team contracted by the EIA Consultant to perform specialist studies.</p>
15	Mr Peter Neilson Nelson Mandela Metro	In Port Elizabeth, there is a growing eco-tourism industry and there is huge opposition to transmission power lines, i.e. acquisition of servitudes. So it is worrying that the transmission lines EIA is not running in parallel with the NPS EIA. It can take approximately two years to negotiate the servitudes. Specific reference was made to the proposed 765 kV lines running from Gamma to Grassridge.	Comment noted. The transmission line EIA is being aligned as closely as possible with the EIA for the proposed nuclear power plant to ensure effective decision-making.
16	Mr Fezile Ndema Coega Development Corporation	<p>Eskom would need more than one site in order to take care of the future electricity requirements, i.e. 20 000 MW?</p> <p>Why would you not undertake the EIAs for all five alternative sites?</p>	The maximum capacity for each site will be assessed and identified as part of the EIA. The EIA and nuclear licensing processes will determine the viability of each site. However, should all sites be found to be technically and environmentally feasible, all five sites in principle may be considered for use in the future.

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			<p>The current EIA is only for one proposed NPS, with associated infrastructure, of the PWR type technology, on one of the five sites. (i.e. the Nuclear-1 project).</p> <p>Environmental authorisations would be required if Eskom applies to proceed with Nuclear-2, Nuclear-3 etc.</p>
17	Coega Development Corporation	<p>Apart from the identified five alternative sites, are there any sites that will be looked at for future requirements, or if any of the sites are not viable?</p> <p>Are there any other sources of water, which could be used for a NPS?</p>	At a later stage Eskom intends to investigate further nuclear sites. The availability of water would be one of the considerations in these future investigations.
18	Dr Peter Inman Coega Development Corporation	Are we not being misinformed in this process, i.e. Areva is looking at Koeberg because they are already having a license.	This is incorrect. The project is still in its investigative phase. No approvals have been received and the negotiations with the potential vendors have not yet commenced. No site has as yet been identified for the proposed NPS.
19	Dr Peter Inman Coega Development Corporation	Does the NNR have the expertise to work on this project within the desired timeframe?	<p>The question should be addressed to the NNR itself.</p> <p>The NNR is governed and controlled, in accordance with the National Nuclear Regulator Act, Act No 47 of 1999, by a Board of Directors and is operated by an Executive comprising the Chief Executive Officer and the staff of the NNR. The Minister of Minerals and Energy is the Executive Authority responsible for the NNR and appoints the NNR Board.</p> <p>The NNR Act provides for the NNR to appoint staff and obtain the services of Consultants (national or international) to ensure that it fulfils its legal mandate.</p>

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20	Mr George Ferreira Nelson Mandela Bay Municipality	The Nelson Mandela Bay Municipality (NMBM) has a resolution to support the development of the NPS in the Eastern Cape.	Comment noted.
21	Mr Khwezi Tiya Dr Peter Inman	What is Eskom doing towards helping people understand nuclear? There is a need for a public awareness campaign to allay fears of disadvantaged communities.  Dr Peter Inman emphasised the importance of education. Eskom needs to do an education programme, as they will not win if they do not undertake this nuclear awareness programme.	Eskom is undertaking a Nuclear Awareness Programme, which is a separate process to the EIA.  Comment noted, with thanks.
22	Dr Peter Inman Coega Development Corporation	It is important that Motherwell (residential area) is included in the consultation process and nuclear public awareness programme, as the NPS will directly affect them.  The main agencies providing jobs to the Motherwell Residents are NMBM and the Coega IDZ. All industries, which are energy intensive, come to the Coega IDZ.  Motherwell residents directly benefit from employment and job creation.	Comment noted.
23	A Stakeholder	The NMBM will assist with the lobbying for positive support from environmental groups, industry, political parties and labour.	Comment noted.
24	A Stakeholder	What is the main issue around geological repositories?	The SA Cabinet approved a National Radioactive Management Policy and Strategy in 2005 (available on the DME website <a href="http://www.dme.gov.za/energy/documents/stm">www.dme.gov.za/energy/documents/stm</a> ). The Department of Minerals and Energy (DME) is currently

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			<p>drafting legislation to implement the Policy. Two options for the long-term management of spent fuel are possible: (a) direct final disposal of the spent fuel in a deep underground geological disposal facility, or (b) reprocessing of the spent fuel to extract unused uranium and plutonium for re-use and concentration and disposal of the residual (about 3-4 % of the spent fuel) high level waste in a deep underground geological disposal facility. Both options are being pursued internationally.</p> <p>The technical solution for the long-term management of radioactive waste is well understood. Various countries are now performing the necessary studies to implement the solution. Finland is one of the countries most advanced in its studies and has commenced the construction of a deep geological disposal facility for spent fuel (reference <a href="http://www.posiva.fi">www.posiva.fi</a>).</p> <p>One purpose-built deep geological repository for long-lived nuclear waste, the Waste Isolation Pilot Plant, for disposal of defence-generated transuranic radioactive waste [clothing, tools, rags, residues, debris, soil etc contaminated with radioactive elements, mainly plutonium, but also others that have atomic numbers greater than uranium] is in operation in New Mexico in the USA (reference <a href="http://www.wipp.energy.gov">www.wipp.energy.gov</a>).</p>

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25	A Stakeholder Coega Development Corporation	How has Koeberg performed over the years of its existence in terms of radiation? Is Koeberg independently monitored?	<p>Everybody is exposed to natural background radiation everyday from, for example, the earth itself, the materials from which buildings are constructed, the sun, and on a less regular basis from medical exposures (X-rays).</p> <p>The quantity of radiation exposure and what is absorbed by the body is measured in microSieverts (<math>\mu\text{Sv}</math>) per annum. The NNR sets the limit of exposure arising from operations at nuclear installations. Hence the limit for Koeberg is set at 250 <math>\mu\text{Sv}</math> per annum, far below the exposure from natural background radiation (which is about 2500 – 3000 <math>\mu\text{Sv}</math> per annum), and less than the international standard of 1000 <math>\mu\text{Sv}</math> per annum. The Koeberg NPS has been in operation for over 23 years - the public exposure to radiation as a result of Koeberg's operations has been less than 20 <math>\mu\text{Sv}</math> per annum in general and less than 6 <math>\mu\text{Sv}</math> per annum in 2005/6 – reference NNR Annual Report 2005/6 tabled in Parliament – available off the NNR website <a href="http://www.nnr.co.za">www.nnr.co.za</a>), far below the limit set by the NNR.</p> <p>Samples of fish, meat, vegetables, milk water, etc are regularly collected from the area around Koeberg and analysed to determine any possible effects on the food chain. Samples are also sent overseas for independent analysis and proof that Eskom is operating within the required limits.</p>
26	Dr Peter Inman Coega Development Corporation	The Coega Development Corporation will submit their comments on the Draft Nuclear Energy Policy.	Comment noted

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27	Coega Development Corporation Nelson Mandela Bay Municipality	The EIA must engage DEAT and all commenting authorities during the process to facilitate decision-making.	The DEAT is the lead environmental authority for the EIA for the proposed NPS. Provincial environmental departments of the Northern, Western and Eastern Cape are commenting authorities. Five different sites are being investigated as part of the EIA.
28	Dr Peter Inman Coega Development Corporation	<p>The graph showing public exposure to radiation from Koeberg implies that Eskom is managing Koeberg NPS extremely well. This information needs to be presented to the public.</p> <p>In addition, actual measurements of worker exposure must be ascertained.</p>	<p>Comment noted.</p> <p>The quantity of radiation exposure and what is absorbed by the body is measured in microSieverts (<math>\mu\text{Sv}</math>) per annum. The NNR sets the limit of exposure arising from operations at nuclear installations. Hence the limit for Koeberg is set at 250 <math>\mu\text{Sv}</math> per annum, far below the exposure from natural background radiation (which is about 2500 – 3000 <math>\mu\text{Sv}</math> per annum), and less than the international standard of 1000 <math>\mu\text{Sv}</math> per annum. The Koeberg NPS has been in operation for over 23 years - the public exposure to radiation as a result of Koeberg's operations has been less than 20 <math>\mu\text{Sv}</math> per annum in general and less than 6 <math>\mu\text{Sv}</math> per annum in 2005/6 – reference NNR Annual Report 2005/6 tabled in Parliament – available off the NNR website <a href="http://www.nnr.co.za">www.nnr.co.za</a>), far below the limit set by the NNR.</p> <p>Actual measurements of worker exposure are taken. Each individual medicals records are confidential to that individual, however the NNR does report on the worker exposure (reference NNR Annual Report 2005/6 tabled in Parliament – available off the NNR website <a href="http://www.nnr.co.za">www.nnr.co.za</a>)</p>