



**ESKOM HOLDINGS LIMITED
GENERATION DIVISION**

NUCLEAR 1 ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PROGRAMME

SPECIALIST STUDY FOR SCOPING REPORT



Photo taken by Eric Coetzee



SPECIALIST STUDY: SITE CONTROL
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SPECIALIST STUDY: SITE CONTROL

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1 EXECUTIVE SUMMARY

This EIA entails the construction and operation of a Conventional Nuclear Power Station and associated infrastructure in the Eastern, Northern or Western Cape areas. The sites, which will be investigated during this Environmental Impact Assessment, have been identified based on previous site investigations undertaken since the 1980s.

Should the proposed project be authorised, it is estimated that the construction of the nuclear power station could commence in 2009/10- with the first unit being commissioned in 2016.

The ToR for the specialist Site Control study are to assess various aspects with respect to site control, including the following:

- Site security;
- Access control (ingress and egress of both during construction and operational phases); and
- Owner control areas.

Other security issues that may be identified during the public participation process.

This Scoping report has been based on a limited scale desk study and a reconnaissance visit to each site by SRK Consulting. Extensive, detailed work has been carried out at the Duynefontein (Koeberg Nuclear Power Station) site.

Project Impacts on the Environment

These are likely to be:

- Restricted access to the Sites by the public.
- Loss of access to the coast.
- Aesthetic degradation due to security fencing and associated infrastructure.

Mitigation Measures

Mitigation measures could include:

- Creation of nature reserves with walking trails on non-security sensitive parts of the Sites, as at Koeberg.
- Access to Koeberg, Brazil and Schulpfontein is already restricted and controlled by security booms.

Impacts of the Environment on the Project

- Reduction in effectiveness of security fencing due to encroachment of shifting dunes
- Regular monitoring/clearing of sand build-up
- Installation of baffles to retard mobile sand belts.

Criteria for Site Sensitivity Analysis

These can be summarized as follows:

- Existing access for the general public
- Existing recreational activities
- Visual impact of security measures

Koeberg, Brazil and Schulpfontein already have restricted access by the public.

2 INTRODUCTION

2.1 Description of Proposed Project

Eskom proposes to construct a nuclear power station of the Pressurised Water Reactor type technology. In many ways the structure of the nuclear plant resembles that of a conventional thermal power plant. The difference between such plants is in the manner in which heat is produced. In a fossil plant, oil, gas or coal is fired in the boiler, which means that the chemical energy of the fuel is converted into heat. In a nuclear power plant, however, energy from the fission chain reaction is utilized. Cooling water for the nuclear power station will be utilised directly from the sea. Although detail design still needs to be completed, it is estimated that the entire development will require in the order of 31 ha, including all auxiliary infrastructure,. The proposed nuclear power station will include nuclear reactor, turbine complex, spent fuel, nuclear fuel storage facilities, waste handling facilities, intake and outfall basin and various auxiliary service infrastructure.

2.2 Terms of Reference

The assessment of impacts will broadly be undertaken in accordance with the guidelines provided in the Guidelines Document: EIA Regulations (DEAT, 1998), the NEMA principles and Section 24(4) of NEMA (as amended), as appropriate to the specific field of study. In addition, the following General Terms of Reference apply to each of the specialist studies:

- Describe the baseline conditions that exist in the study area and identify any sensitive areas that would need special consideration;
- Ensure that all issues and concerns and potential environmental impacts relevant to the specific specialist study are addressed and recommend the inclusion of any additional issues required in the Terms of Reference, based on professional expertise and experience. Also consider comments on the previous specialist studies undertaken for the Nuclear Siting Investigation Programme (NSIP) undertaken during the 1980s-1990s;
- Provide a brief outline of the approach used in the study. Assumptions, sources of information and the difficulties with predictive models must also be clearly stated;
- Indicate the reliability of information used in the assessment, as well as any constraints/limitations applicable to the report (e.g. any areas of insufficient information or uncertainty);
- Identify the potential sources of risk to the affected environment during the construction and operational phases of the proposed project;
- Identify and list relevant legislative and permit requirements applicable to the potential impacts of the proposed project;
- Include an assessment of the “no go” alternative and identified feasible alternatives;

- Assess and evaluate potential direct and indirect impacts during both the construction and operational phase of the proposed project;
- Identify and assess any cumulative effects arising from the proposed project;
- Undertake field surveys, as appropriate to the requirements of the particular specialist study;
- Identify areas where impacts could combine or interact with impacts likely to be covered by other specialists, resulting in aggravated or enhanced impacts and assess potential effects;
- Apply the precautionary principle in the assessment of impacts, in particular where there is major uncertainty, low levels of confidence in predictions and poor data or information;
- Determine the significance of assessed impacts according to a Convention for Assigning Significance Ratings to Impacts;
- Recommend practicable mitigation measures to minimise or eliminate negative impacts, enhance potential project benefits or to protect public and individual rights to compensation and indicate how these can be implemented in the final design, construction and operation of the proposed project;
- Provide a revised significance rating of assessed impacts after the implementation of mitigation measures;
- Identify ways to ensure that recommended mitigation measures would be implemented, as appropriate; and
- Recommend an appropriate monitoring and review programme in order to track the effectiveness of proposed mitigation measures.

The ToR for the specialist Site Control study are to assess various aspects with respect to site control, including the following:

- Site security;
- Access control (ingress and egress of both during construction and operational phases); and
- Owner control areas.

Other security issues that may be identified during the public participation process.

3 BACKGROUND

3.1 Legislative Framework

3.2 Assumptions & Limitations

This Scoping report has been based on a limited scale desk study and a reconnaissance visit to each site by SRK Consulting. Extensive, detailed work has been carried out at the Duynfontein (Koeberg Nuclear Power Station) site. A list of references sources for the study is given in Section 8.

4 DESCRIPTION OF THE SITE AND SURROUNDING ENVIRONMENT

The general location of the five sites is shown in Figure 4.1.

4.1 Thyspunt

The Site is situated in the Eastern Cape province on the coast between the towns of Oyster Bay in the west and St Francis Bay in the east.

The Site is reached from the main N2 highway via Humansdorp and then an untarred secondary road in moderate condition to Oyster Bay. A branch from this road leads to St Francis Bay. The Site is ~400 ha in extent.

The only landward access to the Site is via a dirt track from the Oyster Bay Site boundary. This requires a 4 x 4 vehicle. The Site is covered in virtually impenetrable coastal bush.

These are currently three holiday homes on the Site situated at intervals along the access road.

Arrangements will be made with the authorities having jurisdiction over access along the beach and from the sea so that Eskom will be able to exercise full control over the beach and landings from the sea.

No work will be conducted within the owner controlled boundary (defined as the perimeter enclosing the land owned by Eskom) other than by employees of Eskom and its authorised agents.

The area between the site security fence and the owner controlled boundary will be known as the public exclusion area, which excludes the public from living in this area, but not necessary from visiting it.

Eskom will exercise full control over all activities within the public exclusion area, which will be fenced and provided with suitable warning signs.

All access will be controlled by Eskom from and within the plant security fences.

Access to the foreshore in the vicinity of the nuclear footprint will be restricted to the public.

Access control to the public exclusion area can be mobilised at any time, to ensure the adequate protection of the nuclear power stations on the site. This could be applied for different plant states, e.g. normal or accident conditions and for events such as strikes or demonstrations by lobby groups.

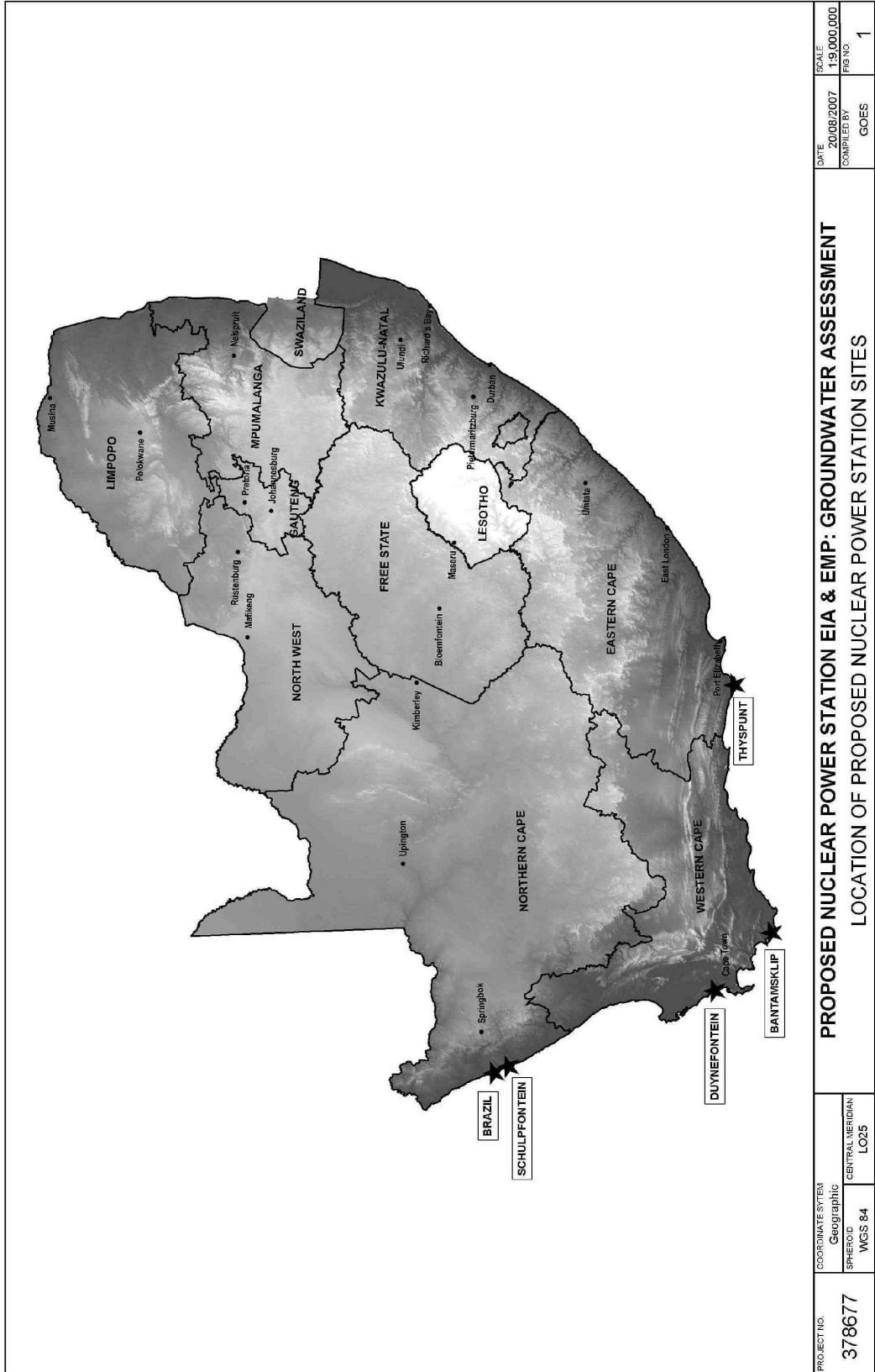


Figure 4.1: General Location Map of the five sites

4.2 Bantamsklip

The Site is situated along the Southern Cape coast between the town of Pearly Beach in the west and Buffeljags in the east. Access is via the tar road from Gansbaai and the current entrance to the site is ~7 km from Pearly Beach. This access road is a sandy track that leads down to the coast, then follows the coast in an eastward direction before re-joining the tar road.

The Site is ~1600 ha in extent. The tar road cuts through it and passes within ? m of the probable nuclear footprint.

Security at the Site is currently compromised by perlemoen/crayfish poachers (pers comm. G Greeff), who could pose a threat to site investigation/construction workers.

Arrangements will be made with the authorities having jurisdiction over access along the beach and from the sea so that Eskom will be able to exercise full control over the beach and landings from the sea.

No work will be conducted within the owner controlled area other than by employees of Eskom and its authorised agents.

The area between the site security fence and the owner controlled boundary will be known as the public exclusion area, which excludes the public from living in this area, but not necessary from visiting it.

Eskom will exercise full control over all activities within the public exclusion area, which will be fenced and provided with suitable warning signs.

All access will be controlled by Eskom from and within the plant security fences.

Access to the foreshore in the vicinity of the nuclear footprint will be restricted to the public.

Access control to the public exclusion area can be mobilised at any time, to ensure the adequate protection of the nuclear power stations on the site. This could be applied for different plant states, e.g. normal or accident conditions and for events such as strikes or demonstrations by lobby groups.

4.3 Duynefontein

This information is taken from the Koeberg Site Safety Report, Chapter 12 (Rev 3).

Measured from a centralised co-ordinate (X: -52727.4000 and Y: -3727966.6500) the boundaries of the owner controlled boundary can be described as being location from Koeberg 900 MW PWR units 1 and 2 as follows:

- The northern boundary of the farm Duynefontein, approximately 2.4 km from co-ordinate XY.
- The eastern boundary, being the western boundary of the servitude for R27 which passes approximately 3.4 km from co-ordinate XY.

- The southern boundary of the farm Duynefontein, a minimum distance of 1.9 km from co-ordinate XY. This is also the distance to the residential area of Duynefontein to the south.
- The western boundary of Eskom's property is the high-water mark along the foreshore from the southern owner controlled boundary to the northern owner controlled boundary, and located at approximately 0.14 km from XY.

The distance between Koeberg 900 MW PWR units 1 and 2 and Koeberg 165 MW PBMR unit 3 is approximately 0.6 km.

The owner controlled boundary in relation to Koeberg 165 MW PBMR unit 3 can be described as follows:

- The northern boundary of the farm Duynefontein, is located approximately 2.9 km from Koeberg 165 MW PBMR unit 3.
- The eastern boundary, being the western boundary of the servitude for R27 which passes approximately 3.2 km from Koeberg 165 MW PBMR unit 3.
- The southern boundary of the farm Duynefontein, a minimum distance of 1.3 km from Koeberg 165 MW PBMR unit 3. This is also the distance to the residential area of Duynefontein to the south.
- The western boundary of Eskom's property is the high-water mark along the foreshore from the southern owner controlled boundary to the northern owner controlled boundary, and located at approximately 0.4 km from Koeberg 165 MW PBMR unit 3.

Arrangements will be made with the authorities having jurisdiction over access along the beach and from the sea so that Eskom will be able to exercise full control over the beach and landings from the sea.

No work will be conducted within the owner controlled area other than by employees of Eskom and its authorised agents.

The area between the site security fence and the owner controlled boundary will be known as the public exclusion area, which excludes the public from living in this area, but not necessary from visiting it.

Eskom will exercise full control over all activities within the public exclusion area, which will be fenced and provided with suitable warning signs.

All access will be controlled by Eskom from and within the plant security fences.

Access to the foreshore in the vicinity of the nuclear footprint will be restricted to the public.

Access control to the public exclusion area can be mobilised at any time, to ensure the adequate protection of the nuclear power stations on the site. This could be applied for different plant states, e.g. normal or accident conditions and for events such as strikes or demonstrations by lobby groups.

4.4 Brazil

The Site is situated along the West Coast in the Northern Cape Province approximately 16 km south of Kleinzee. It is ~5 930 ha in extent. Access is via the tar road from Koingnaas to Kleinzee and then a main dirt track down to the coast, with several branches providing access to different areas.

The Site is situated in a restricted diamond area and there are security booms/checks at both Koingnaas and Kleinzee where permits to enter must be obtained.

Arrangements will be made with the authorities having jurisdiction over access along the beach and from the sea so that Eskom will be able to exercise full control over the beach and landings from the sea.

No work will be conducted within the owner controlled area other than by employees of Eskom and its authorised agents.

The area between the site security fence and the owner controlled boundary will be known as the public exclusion area, which excludes the public from living in this area, but not necessary from visiting it.

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Access control to the public exclusion area can be mobilised at any time, to ensure the adequate protection of the nuclear power stations on the site. This could be applied for different plant states, e.g. normal or accident conditions and for events such as strikes or demonstrations by lobby groups.

4.5 Schulpfontein

The Site is situated along the West Coast in the Northern Cape Province approximately 16 km south of Kleinzee. It is ~9 020 ha in extent. Access is via the tar road from Koingnaas to Kleinzee and then a main dirt track down to the coast via Noup, with several branches providing access to different areas.

The Site is situated in a restricted diamond area and there are security booms/checks at both Koingnaas and Kleinzee where permits to enter must be obtained.

Arrangements will be made with the authorities having jurisdiction over access along the beach and from the sea so that Eskom will be able to exercise full control over the beach and landings from the sea.

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5 IMPACTS AND MITIGATION MEASURES

5.1 Project Impacts and Mitigation Measures

5.1.1 Project Impacts on the Environment

These are likely to be:

- Restricted access to the Sites by the public.
- Loss of access to the coast.
- Aesthetic degradation due to security fencing and associated infrastructure.
-

5.1.2 Mitigation Measures

Mitigation measures could include:

- Creation of nature reserves with walking trails on non-security sensitive parts of the Sites, as at Koeberg.
- Access to Koeberg, Brazil and Schulpfontein is already restricted and controlled by security booms.

5.2 Environmental Impacts and Mitigation Measures

5.2.1 Impacts of the Environment on the Project

- Reduction in effectiveness of security fencing due to encroachment of shifting dunes

5.2.2 Mitigation Measures

- Regular monitoring/clearing of sand build-up
- Installation of baffles to retard mobile sand belts.

6 SITE SENSITIVITY ANALYSIS

6.1 Criteria for Site Sensitivity Analysis

These can be summarized as follows:

- Existing access for the general public
- Existing recreational activities
- Visual impact of security measures

6.2 Site Sensitivity

Koeberg, Brazil and Schulpfontein already have restricted access by the public.

6.3 Discussion and Recommendations

7 CONCLUSIONS

This Scoping report has been based on a limited scale desk study and a reconnaissance visit to each site by SRK Consulting. Extensive, detailed work has been carried out at the Duynefontein (Koeberg Nuclear Power Station) site.

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Impacts of the Environment on the Project

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Criteria for Site Sensitivity Analysis

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- Existing access for the general public
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-
- Koeberg, Brazil and Schulpfontein already have restricted access by the public.

8 REFERENCES

ESKOM (2007) *Quality Control Manual (Rev 4), chapter 25, Site Layout and Infrastructure*. NSIP-019580

ESKOM (2006) *Site Safety Reports (Rev 3). Chapter 12*.