



environment & tourism

Department:
Environmental Affairs and Tourism
REPUBLIC OF SOUTH AFRICA

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PER FACSIMILE / MAIL

Dear Mr Liversage

APPLICATION FOR ENVIRONMENTAL AUTHORISATION R. 386 and R. 387: PROPOSED CONVENTIONAL NUCLEAR POWER STATION (NUCLEAR 1)

The final scoping report (SR), dated July 2008, submitted to the Department for environmental authorisation of the abovementioned project on 14 July 2008 refers. You have submitted this document to comply with the Environmental Impact Assessment Regulations, 2006.

The Department has evaluated the submitted documents and is satisfied that the documents comply with the legal requirements. The Scoping Report is hereby accepted by the Department in terms of regulation 31(1)(a) of the Environmental Impact Assessment Regulations, 2006 subject to the following conditions:

1. General:

- 1.1 The Environmental Assessment Practitioner (EAP) must include detailed Curriculum vitae of the key staff managing this project in the Environmental Impact Report (EIR).
- 1.2 Detailed Curriculum Vitae of all specialists must be included as well as proof of their applicable registration.
- 1.3 The appointment of peer reviewers is not a legal requirement, but the role and deliverables of the peer reviewers must be made clear in the EIR.

Muhsaho wa zwa Vhupo na Vhuendelamashango • LiTiko le Tsemondzawo netakuVakasha • Isebe lemiCimbi yokusilNgqongileyo nokhenketho
Ndzawulo ya Tinkhaka & Mbango • Department: Omgewingsake en Toetsime • Lefapha la Tikolophu le Buhantlaudi • Lefapha la Bojanala
Kgoro ya Tikologo le Boetl • UmNyango wezeBhudutuko nokuVakalija • Umnyango Wezemvelo Nokuvakaha

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1.4 The EAP must ensure that the structure and readability of the reports is ensured when drafting the EIR and that clear cross referencing takes places.

2. Content of the Scoping Report:

Project Description:

- 2.1 The project description information is inadequate. It is unclear whether the application includes temporary power supply, access roads or wastewater treatment works. The proposed location and extent of the lay-down areas, the extent of earthworks required to create the platform and the volume and proposed methods of disposal of sand/material have also not been included.
- 2.2 A layout plan of the proposed footprint of the Nuclear Power Station (NPS) must be included in the EIR, indicating where all infrastructure will be placed.
- 2.3 It is indicated in the EIR that the Emergency Planning Zones (EPZ) will be determined by the NNR. The NNR Act requires the Regulator to make certain that provisions for emergency planning are in place and that the emergency plan is available. Eskom would therefore have to determine the emergency planning zones based on the NNR requirements document on "Emergency Planning and Response Requirements for Nuclear Installations" (RD-0014). These emergency planning zones will be accepted by the NNR based on the safety case for the siting of the nuclear installation. The NNR would only be in a position to agree to emergency planning requirements once the relevant information and justification have been provided by Eskom to the NNR and after thorough assessment.
- 2.4 Section 4.9.5 on p4-24 must be amended as follows: The occupational exposure of any worker as per the Regulations in Terms of Section 36, Read With Section 47 of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999) on Safety Standards and Regulatory Practices (RSRP) must be so controlled that the following limits are not exceeded: *An (average) effective dose of 20 mSv per year averaged over five consecutive years; A (maximum) effective dose of 50 mSv in any single year.*
- 2.5 Section 4.12 on p4-29 - The relevant NNR requirements to be complied with in terms of decommissioning is given in Section 5 of the RSRP and further elaborated in RD-0016 "Decommissioning of Nuclear Facilities". The section gives the impression that US practice will be followed. The section could be improved by further elaborating on the NNR role and requirements on decommissioning.

- 2.6 The EIR must address the decommissioning of the NPS in more detail. The long-term impacts and the long-term sterilisation of land must be addressed.
- 2.7 The Green House Gases (GHG) issue must be addressed in more detail in the EIR. The amount of GHG produced during the life cycle of the NPS must be calculated and included in the EIR.
- 2.8 The possible nuclear contamination of key water resources must be discussed in the EIR.
- 2.9 Clarification must be provided with regards to whether the proposed desalination plant for the Duynefontein site is expected to supply water to both the NPS proposed as well as to the existing Koeberg NPS.
- 2.10 Waste disposal and transportation has not been adequately addressed and must be described in detail in the EIR to follow. It must be explained whether or not a new waste disposal site/s will be established on or near the existing site for nuclear waste disposal. Further clarity must be provided on the transportation of nuclear waste to and from the NPS.
- 2.11 The long term storage of high level nuclear waste must be addressed in the EIR.
- 2.12 The Department is concerned about the impacts that the projected rise in sea levels, due to global warming, may have on the facility in future. The proposed development of a NPS is undertaken on the coastline and impacts due to the projected sea level rise must be assessed in terms of different projections and the time-scale in which it is expected. This should be done based on available and comparative information.
- 2.13 The process for establishing and communicating the details of the evacuation plan to the community must be addressed in the EIR.

Alternatives:

2.14 Power generation alternatives

- 2.14.1 The SR is deficient in presenting the suite of policies which led government, the National Energy Regulator and Eskom to submit an application for a proposed conventional pressurized water reactor (PWR). The screening of power generation alternative to arrive at the conclusion that PWR is the preferred option is poorly motivated and hence undermines the well communicated need and desirability of the proposed project. This must be addressed in the EIR.

- 2.14.2 There is a missing link between the National Policy on Nuclear Energy and the EIA document. This creates the impression that the use of nuclear is open for discussion. This must be clarified in the EIR.
- 2.15 Nuclear technology alternatives
- 2.15.1 The proposed technology alternatives discussed in the SR must be assessed taking into consideration their environmental performance.
- 2.16 Nuclear fuel options alternatives
- 2.16.1 Nuclear fuel options must be further investigated as part of the alternatives considered in the EIA process with a particular emphasis on the reduction in volume of spent fuel generated.
- 2.17 Site alternatives
- 2.17.1 The Department accepts the exclusion of the Brazil and Schulpfontein sites for further investigation in this EIA process, as they are not technically feasible at this stage. The Department has also however noted that these sites will be considered for future nuclear projects.

Legislation and Guidelines:

- 2.18 The EAP must explain how the applicable legislation, policies and guidelines are applied to the specialist studies to be conducted during the EIR phase.
- 2.19 The EAP must confirm the list of activities applied for, to ensure that these activities are included and assessed. Possible activities excluded may be, activity 1(l) of GN R 386 & 387, as temporary electricity supply may be needed on site, activity 1(r) of GN R387 as the sterilization phase of any wastewater treatment works and possibly the chlorination of the tertiary sea water cooling system could be required.
- 2.20 The EIR must contain a clear explanation of the link between the DEAT environmental authorisation process and the National Nuclear Regulator (NNR) licensing process.
- 2.21 All radiological issues raised during the EIA process, which are not comprehensively addressed, must be explicitly referred to the NNR to be addressed as part of their process.

Methodology proposed for the assessment of impacts:

- 2.22 The proposed methodology for the assessment of impacts is vague and it is not clear how the various sites will be compared. The inclusion of economic, engineering, "strategic" and transmission information is supported, but these must then be studied, assessed and included in the EIR.

- 2.23 The Terms of Reference (TOR) of each specialist must include detailed sensitivity mapping of sites or the relevant portions of each site. This is particularly important to inform the power station terrace as well as the location of the other infrastructure in the least sensitive areas.
- 2.24 The EAP must ensure that the assessment of impacts take cognizance of the legal and policy framework in the determination of the significance of impacts in the EIR.
- 2.25 Certain specialist studies (Human Health Risk Assessment, Traffic and Transport Report and Security Report) included in the EIA process could result in conflicting NNR and DEAT assessment outcomes and findings. It is therefore recommended that the specialist studies relating to the radiological impact be qualitative in nature as quantitative studies would require appropriately verified and validated models and codes and quantitative dose and risk assessment criteria.
- 2.26 Air Quality Impact Assessment
- 2.26.1 Background air quality monitoring should be undertaken on all sites. A baseline is important when looking at the added impacts that an activity will have. The current air quality should be sampled at all alternatives sites and for the Koeberg site; actual emissions should be used to discuss the cumulative impacts.
- 2.26.2 Data from Koeberg must be utilized to support the air quality network. There is known data from a similar technology operated in South African conditions. Therefore this information could be used to plug into dispersion models to determine the possible impacts in other areas.
- 2.26.3 The inventory compiled should look at cumulative impacts on the Koeberg site, including the storage of waste both current and future, the PBMR and the two nuclear power stations.
- 2.26.4 The radioactive air concentration must be compared against SA and International standards.
- 2.26.5 This section makes a lot of reference to the Thyspunt site and not the other sites. This must be corrected in the EIR.
- 2.27 Human Health Risk Assessment
- 2.27.1 A risk assessment would require plant-specific and site-specific data not available at present and therefore it is not feasible to include this as part of the EIA. It is recommended that the report could refer to R388 on Safety Standards and Regulatory Practices in terms of dose and risk criteria for the

public for normal operations and accidents, and state that these criteria will be respected and will be included in the NNR process.

2.27.2 The SR indicates that exposure will be based on probable exposure. Information from the existing Koeberg NPS should be used for modelling.

2.28 Traffic and Transport Report

2.28.1 The proposed analyses for evacuation would be very sensitive to the assumptions regarding the 5km and 16km zones. This matter will be deferred to the NNR process.

2.29 Security

2.29.1 This report should include confirmation of the availability of police, military, naval etc. support. A study or review by National Keypoints would be desirable.

2.30 Seismology

2.30.1 The Seismology specialist must analyze and summarize available data gathered by existing seismic activity monitoring equipment into account.

2.31 Hydrology / Freshwater Supply Assessment

2.31.1 This assessment must include information on water availability and the need and desirability of a desalination plant.

2.32 Oceanography Report

2.32.1 This assessment must discuss the possibility of occurrence and mitigation which would be required in the event of storms which may result in the clogging and disruption of up / intake pipelines for seawater.

2.33 Vertebrate Specialist Study

2.33.1 The vertebrate specialist study must address the impact of the proposed NPS on the large colony of cormorants which was seen roosting on the shoreline in front of the proposed terrace at the Bantamskip site during the site inspection in March 2008.

2.34 Tourism and Marine Biology Assessment

2.34.1 These assessments must assess the impacts of the proposed development on the Great White Shark and Whale Watching tourism activities.

2.35 Floral Specialist Study

2.35.1 The TOR for this study should include the identification of the need for offsets and if there is a need, the actual offset areas.

2.36 Wetland Ecosystem Study

2.36.1 The TOR for this study must include the impact of water extraction as a result of a high water table on the wetlands. The wetlands must also be mapped more clearly.

2.37 Economic Study

2.37.1 This study must address the cost implications of the proposed NPS in relation to other electricity generating activities.

2.38 Agricultural Impact Assessment

2.38.1 The management of waste from the desalination plant must also be considered.

2.39 All specialist reports must include impacts related to the proposed desalination plants.

2.40 All specialist reports must identify no-go areas and also make recommendations as to the preferred siting of the facility with respect to their particular areas of expertise. This must be used to inform the layout design of the proposed facility where possible.

2.41 All specialist reports must consider climate change considerations in their assessments.

2.42 All specialist reports must use information from the Koeberg NPS and must assess the cumulative impacts on site.

2.43 The cumulative impacts of the proposed training centre, PBMR and this proposed NPS on the Duynefontein site must be assessed. Any mitigation and offset agreement will also have to take all these issues into account.

Public Participation:

2.44 DEAT is concerned over the fact that the Issues Trail as well as various other responses given to the Interested and Affected Parties (I&APs) do not give a clear indication on how their inputs have been taken into account in the SR and more importantly, how it has been used to define the Plan of Study for EIR (POS for EIR). The EAP must ensure that all issues are addressed in the EIR phase and that the Issues Trail/s in the EIA phase allows readers to track how the responses to issues have affected the report.

- 2.45 Issues raised with regards to radiology seem to have been addressed by Eskom and not by the EAP's independent nuclear expert. It is recommended that the EAP's specialist provide the responses or at least review these responses to the I&APs.
- 2.46 The EAP must ensure that written comment is received on the draft EIR as well as the final EIR from all relevant government departments.
- 2.47 The Bantamsklip site is a Protected Areas as well as a Natural Heritage Site and falls within the Agulhas Biodiversity Initiative (ABI). Comments from SANParks, CapeNature and DEAT Protected Areas must be included in the EIR.
- 2.48 No comments from the Eastern Cape conservation department or the Northern Cape conservation department were included in the SR. This must be included in the EIR.
- 2.49 The draft EIR must be put out for a 60 day comment period in order to allow for adequate time to understand the documentation and to formulate considered comments.
- 2.50 The following issues were identified through the public participation process and have to be addressed in the EIR:
 - 2.50.1 Waste management associated with nuclear power; and
 - 2.50.2 Safety, and emergency measures.

3. Content of the POS for EIR:

A revised POS for EIR must be submitted to this Department for approval. The revised POS for EIR must take cognisance of the conditions of approval of the SR and also the following:

- 3.1 The lack of clarity regarding which issues will not be considered further in the EIA phase and the lack of a detailed rationale for their exclusion is of concern. The EAP must ensure that all issues raised by I&APs that have not been robustly screened out during the scoping process are addressed in the EIR.
- 3.2 The specialist baseline studies presented in the SR lack focus and are not considered adequate. The TOR for each specialist for the Scoping Phase should have revolved around the refinement of the TOR for the full study to be undertaken during the EIR phase.
- 3.3 The key impacts identified during the Scoping process have not been indicated in the POS for EIR. A list of these key impacts and how they will be addressed in the EIR must be included in the revised POS for EIR.

- 3.4 Section (l), P10-17 – DEAT would like to indicate that according to the NNR, they do not approve models. The NNR will accept the use of a specific model for a specific application as part of the assessment of a safety case considering the relevant verification and validation requirements as provided in RD-0016 "Requirements for authorisation submissions involving computer software and evaluation models for safety calculations."
- 3.5 Section (l), last bullet, P10-17 - This paragraph indicates that the specialist study will assess the potential radionuclide emission during accidents to determine potential time frames and significance of risk. Clarification is requested on what documents will form the basis for the assessments, what methodologies and models will be used and what will be the assessment criteria.
- 3.6 Section (o), P10-20 – Clarification is requested on what documents will form the basis for the assessments and what the assessment criteria will be. The NNR has defined quantitative public dose and risk criteria and will be assessing these aspects as part of the safety case for construction.

Please note that a revised POS for EIR must be submitted to this Department for approval, but that you can however proceed with the EIA process required in terms of the Environmental Impact Assessment Regulations, 2006. You are hereby reminded that the activity may not commence prior to an environmental authorisation being granted by the Department.

Yours sincerely



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Deputy Director-General: Environmental Quality and Protection
Department of Environmental Affairs and Tourism

Date: 19/11/08

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Appendix 2: Statement by the Director-General concerning the consideration of matters pertaining to nuclear safety in Environmental Impact Assessment processes on nuclear installations