

EXECUTIVE SUMMARY: REVIEW OF EIA AND SPECIALIST STUDIES: NUCLEAR-1 PROJECT, DUYNEFONTEIN, WESTERN CAPE

October 2023

SRK Project Number: 594280

Note: All changes to the Executive Summary following public comment are italicised and underlined for ease of reference.

1 INTRODUCTION

Eskom Holdings SOC Ltd (Eskom) appointed ARCUS GIBB (Pty) Ltd (now GIBB) to undertake an Environmental Impact Assessment (EIA) for the proposed construction, operation and decommissioning of a proposed nuclear power station and associated infrastructure at one of three alternative sites, viz. Thyspunt in the Eastern Cape and Duynefontein and Bantamsklip in the Western Cape.

On 11 October 2017, the Department of Forestry, Fisheries and the Environment (DFFE) granted an Environmental Authorisation (EA) for a proposed nuclear plant at Duynefontein (hereafter Nuclear-1, interchangeably Nuclear Power Station). The decision was appealed and on 8 August 2022, DFFE's Minister, the Honourable Ms. B Creecy adjourned the appeal process to afford Eskom an opportunity to appoint an independent specialist to commission a Climate Change Impact Assessment (CCIA) study and review specialist studies, the Final Environmental Impact Report (FEIR) and the Environmental Management Programme (EMPr, interchangeably EMP) relating specifically to the Duynefontein site (Figure 2), to identify any data gaps and determine risks of not updating reports. This will inform the Minister's final decision on the appeal process.

SRK Consulting (South Africa) (Pty) Ltd (SRK) has been appointed by Eskom to review the FEIR, EMPr and specialist studies. Also, SRK, on behalf of Eskom, appointed The Promethium Group (Promethium) to undertake the required CCIA, presented as a separate CCIA Report (CCIAR).

The Scope of Work (SoW) to inform the Minister's decision on the appeal process, is to:

- Review specialist studies, the FEIR and the EMPr to determine risks of not updating reports, and determine if the risks (if any) need to be mitigated;
- Compile a report documenting the findings of the review and recommend methods to address any gaps;
- Undertake a CCIA; and
- Conduct a public participation (stakeholder engagement) process, as prescribed by the EIA Regulations (2014) as amended.

As confirmed by DFFE, the reviews and CCIA are required for the Duynefontein Nuclear-1 site only.

2 PROJECT DESCRIPTION

Eskom proposes to construct, operate and decommission a conventional nuclear power station in South Africa in order to meet the total demand for electricity. Economic growth and social needs are resulting in substantially greater energy demands. As a result, new generating capacity must be installed to cater for the growth in energy demand or to replace aging plants.

Pressurised Water Reactor (PWR) technology, which uses water as a coolant and moderator, was chosen by Eskom for Nuclear-1. PWRs are the most commonly used nuclear reactors internationally; and Eskom is familiar with this technology, having used it for the past 30 years at the Koeberg Nuclear Power Station (KNPS).

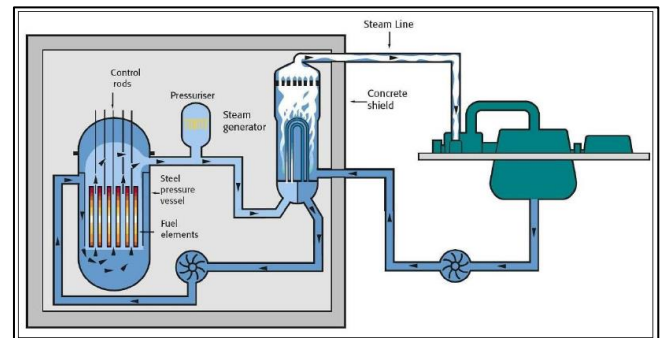


Figure 1: Simplified diagrammatic depiction of a Pressurised Water Reactor (Ragheb, 2008)

The proposed Nuclear-1 Project will include, *inter alia*, the nuclear reactor, turbine halls, fuel storage facilities, waste handling facilities, marine intake and outfall structures to obtain / release water used to cool the process, a desalination plant, power lines within the plant site, roads, the high voltage yard, and any other auxiliary service infrastructure. If authorised, construction of Nuclear-1 is expected to extend over approximately nine years.

The total footprint required for the (4 000 MW) Nuclear-1 at Duynefontein is ~265 ha. The Nuclear-1 building will occupy one third of the footprint, with the remainder of the area affected by construction activities. Two categories of exclusion zone for emergency planning purposes will be implemented around the Nuclear-1 complex.

KOEBERG LOCALITY MAP

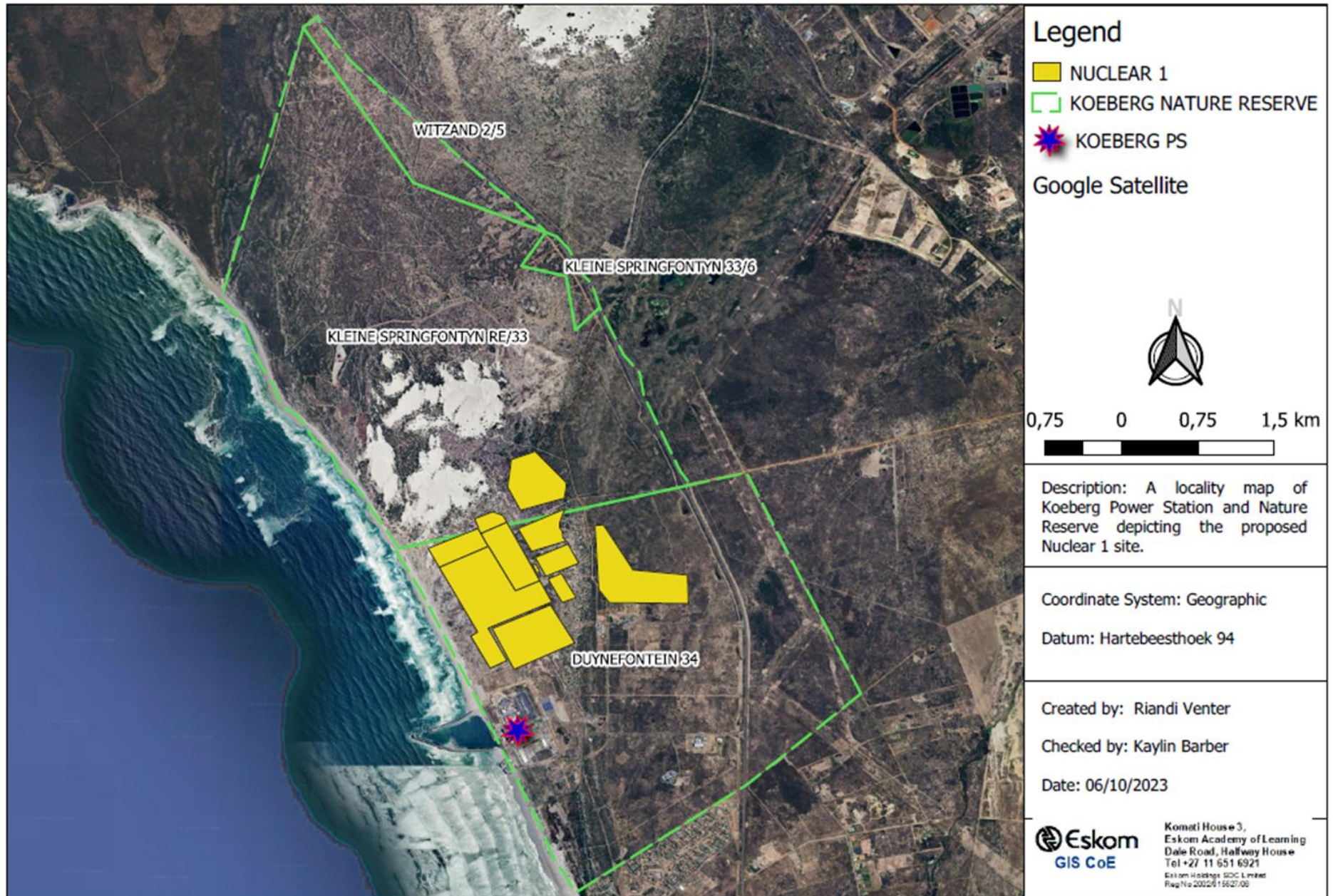


Figure 2: Duynefontein Site Locality

Three site alternatives were assessed in the EIA:

- Duynefontein, situated adjacent (to the north of) the KNPS on the Cape West Coast, approximately 35 km north of Cape Town;
- Bantamsklip, on the Southern Cape coast, mid-way between Danger and Quoin Points; and
- Thyspunt, situated on the Eastern Cape coast between Oyster Bay and St. Francis Bay.

The EIA recommended authorisation of the Nuclear-1 development at the Thyspunt site, but DFFE authorised the development in the Duynefontein site. However, Eskom may still undertake processes to authorise development of a Nuclear Power Station at Thyspunt and/or Bantamsklip.

3 REVIEW APPROACH AND METHODOLOGY

Regulatory Context

The EIA Regulations, 2006 (GN R385 of 2006), promulgated in terms of NEMA, governed the process, methodologies and requirements for the Nuclear-1 EIA undertaken by GIBB.

The EIA Regulations, 2006 and associated Listing Notices were replaced by the EIA Regulations, 2014 (Government Notice (GN) R982) and associated Listing Notices 1-3, which came into effect on 4 December 2014 and were further amended on 7 April 2017, prior to conclusion of the EIA process. The EIA for Nuclear-1 commenced prior to the promulgation of the EIA Regulations, 2014, and was concluded under the provisions of the EIA Regulations, 2006.

In the interim a number of new regulatory requirements, specialist study regulations, specialist reporting protocols published under the NEMA 2014 EIA (as amended) (GN 320, 2022), and standards have been effected. The NEMA 2014 EIA regulations include transitional arrangements and explicitly state that *“53 (4) An appeal lodged in terms of the previous NEMA regulations, and which is pending when these Regulations take effect must despite the repeal of those previous NEMA regulations be dispensed with in terms thereof as if those previous NEMA regulations were not repealed.”* Therefore, it can be inferred that the protocols and other instruments that have subsequently been published in terms of the NEMA 2014 EIA regulations are not applicable to pending applications.

Clearly the Nuclear-1 EIA could not and - in law - does not need to comply with instruments which came into effect after the Nuclear-1 EIA process commenced (i.e. after the application was lodged). In other words the Nuclear-1 EIA cannot be expected to comply with “the letter of new law”.

Approach to Review

The review does not assess the correctness or accuracy of information presented in the EIA Report or specialist reports as these were very thoroughly reviewed during the EIA process, and EA was granted for Nuclear-1 at Duynefontein.

Specialist Impact Assessments Reviewed:

- | | |
|----------------------------------|----------------------|
| • Dune Geomorphology | • Vertebrate Fauna |
| • Hydrology | • Invertebrate Fauna |
| • Geohydrology | • Marine Ecology |
| • Oceanography | • Social |
| • Radiology | • Economic |
| • Air Quality | • Visual |
| • Noise | • Heritage |
| • Botany and Dune Ecology | • Agricultural |
| • Freshwater Ecology and Wetland | • Transportation |
| | • Town Planning |

Technical Assessments Reviewed:

- | | |
|-----------------------------------|---------------------------------|
| • Geological Hazard | • Seismic Risk |
| • Emergency Response | • Site Control |
| • Geotechnical Suitability | • Transmission Integration |
| • Position of 1:100 Sea Floodline | • Radioactive Waste Management |
| • Emergency Response | • Beyond Design Accident Report |
| • Human Health Risk | |
| • Freshwater Supply | |

The review assumes that the EIA process, stakeholder engagement, FEIR and specialist studies were comprehensive, legally compliant and fit-for-purpose when EA was granted in October 2017. The review is thus not a technical review, but a process review assessing whether EIAs and associated studies undertaken over 10 years ago are fit-for-purpose in their current form.

To that end, the review focuses on:

- The extent to which the EIA, undertaken in terms of the 2006 EIA Regulations, is aligned with the intent and “spirit” of the EIA Regulations, 2014. This entailed a detailed review of transitional provisions and the FEIR against a number of aspects, including stakeholder engagement;
- Alignment with and applicability of “the spirit” and intent of (new) specialist study regulations and reporting protocols;
- Whether old information is still suitable, i.e. is baseline information and data in the Nuclear EIA adequate for the purposes of EA or have conditions changed so considerably that the information may compromise the original EA;

- The materiality of the information, i.e. does the status of the information in the FEIR or a particular study affect potential impacts of the project, increasing the risk that the project will not withstand further appeals in future; and
- Whether data deficiencies and risks can be addressed:
 - Through new conditions attached to the EA and/or appeal decision, including conditions which may pertain to more technical matters, e.g. seismic risk;
 - By a new application for EA (i.e. a new EIA process);
 - By updating the EMPr;
 - Through a Specialist Study Addendum;
 - By implementing and disclosing a Grievance Redress Mechanism and reacting to valid grievances as they arise;
 - Through another legislative process (e.g. land use application); or
 - Some other process.

4 STAKEHOLDER ENGAGEMENT

The directive issued by Minister Creedy on 8 August 2022 required that the Review Report and CCIA are released to all registered IAPs, including appellants, the competent authority (DFFE) and all relevant organs of state for a period of at least 30 days as prescribed by the EIA Regulations, 2014, as amended. The release of the CCIA and Review Reports and public participation process have been undertaken in accordance with Chapter 6 of the EIA Regulations, 2014 and the Protection of Personal Information Act 4 of 2013 (POPIA).

The purpose of the current stakeholder engagement process is not to reopen comment on the issues previously identified in- and/or the merits of- the EIA undertaken by GIBB, since SRK is neither qualified nor appointed to respond to such comments.

*Rather the purpose of the current round of stakeholder engagement is to solicit comment only on the **reviews** in the Review Report compiled by SRK, and the CCIA compiled by Promethium.*

The stakeholder engagement activities undertaken during the current process are summarised in Table 1.

Table 1: Stakeholder Engagement during Screening Process

Activity	Date
Place site notification posters on Deynefontein Site	20 July 2023
Advertise release of the Review Report and CCIA for public comment.	29 June 2023 – 21 July 2023

Activity	Date
Notify IAPs of release of the reports for public comment via post, email and SMS.	20 July 2023
Submit Draft Review Report and CCIA to DFFE	21 July 2023
Public comment period	24 July 2023 - 23 August 2023, <u>extended to 22 September 2023</u>
Public Open Day	7 August 2023
Virtual Meeting	15 August 2023
Compile Issues and Responses Summary and finalise the Review Report and CCIA	<u>23 September – 10 October 2023</u>
Submit Final Review Report, CCIA and Issues and Response Summary to DFFE	<u>13 October 2023</u>

All comments received during the public comment period have been recorded and responded to in an Issues and Responses Summary, which is appended to the Final Review Report submitted to the Minister.

Key comments and concerns raised by stakeholders can be summarised as follows:

- Outdated and inadequate baseline studies (despite most specialist reviewers finding that there are no material deficiencies and the studies remain fit for purpose). This concern related to many specialist studies;
- Contested purpose of the EIA Review with an expectation that EIA specialist reports would be supplemented, as opposed to reviewed to determine, inter alia, whether they should be supplemented;
- SRK's (and specialist reviewers') independence (or lack thereof);
- Interpretation of transitional provision in section 53(4) of the NEMA 2014 EIA Regulations;
- The need and desirability of nuclear power, noting the increased contribution of renewables to the energy mix; and
- Outdated climate change projections in the CCIA.

5 REVIEW CONCLUSIONS

The conclusions and key findings of the review of the **FEIR and EMPr** can be summarised as follows:

- The project description as presented in the FEIR is still considered valid;
- While the information presented in the EIA Report relating to the Integrated Resource Plan (IRP, 2019), current and proposed additional power generation capacity may be out of date, this will not affect either the motivation that additional power generation capacity is urgently required in South Africa;
- It is not within the remit of this review to decide which forms of energy generation are most appropriate; that decision (and the Minister's final decisions regarding the Nuclear-1 Project) is policy driven via the dynamic IRP;
- The EIA process undertaken was adequate to meet current requirements in terms of the EIA Regulations,

2014;

- The original public participation process provided DFFE with a comprehensive understanding of stakeholder interest and comments (relating specifically to the Duynefontein site) to inform decision making;
- The assumptions and limitations in the EIA remain valid, and no re-assessment of impacts is required due to changes in assumptions;
- The validity of the baseline data was evaluated in the reviews of the specialist studies which found that no material changes to the baseline have occurred which would invalidate the FEIR;
- A robust impact assessment methodology was employed and relevant impacts were assessed. The validity of the impacts assessed by specialists was evaluated in the reviews of the specialist studies, which found no material omissions in the impact assessments which would invalidate the FEIR;
- There has been a substantial increase in the development of renewable energy projects, in recent years (since the EIA was concluded). The statement in the FEIR that that renewable energy (wind and solar power) could not provide adequate base load or integrate easily into the existing power network may no longer be correct; however the energy mix is informed by the IRPs;
- The conclusions and recommendations in the FEIR remain valid and the FEIR is fit-for-purpose to inform a decision; and
- The EMPr is regarded as a dynamic document and will be routinely updated by Eskom as new information becomes available, e.g. once detailed design is finalised. This is standard practice. In this regard, the legislation annexure of the EMP will also need to be updated to reflect recent policies, plans, regulations, treaties and other legal instruments.

The conclusions and key findings of the **specialist study reviews** can be summarised as follows:

- All specialist reviews concluded that specialist reports are considered to be suitable for decision making in their current form. *The majority* of specialist reviewers did not recommend any updates to the studies, *however*:
 - Since the initial specialist review was undertaken, the National Biodiversity Offset Guideline has been gazetted. The specialist reviewer recommends that the Minister must reconsider the merits of an offset as a condition of authorisation in adjudicating the appeal, to take account of the National Biodiversity Offset Guideline;
 - The Economic Impact Assessment found that nuclear is the cheaper and more appropriate (energy generation) option, a conclusion which may no longer be valid. The specialist reviewer recommends that the Minister must consider the IRP (DoE, 2019), which supersedes the IRP 2010, when adjudicating the appeal;

- The specialist reviewer of the 1:100 year flood line recommends that Nuclear-1 design complies with recommendations in separate Site Safety Reports (SSRs) commissioned for the National Nuclear Regulator (NNR) licensing process, for a Nuclear Power Station at Duynefontein; and
- The Grid Integration Report specialist review, which recommended a new Grid Integration Study.

6 RECOMMENDATIONS

The principal recommendations of the **reviews** of specialist studies, the FEIR and EMPr are that **Eskom** must:

- Acquire relevant (environmental) permits and licences, in terms of the legislation applicable at the time, once the appeal process is finalised;
- Ensure that the Nuclear Power Plant design complies with recommendations in separate SSRs commissioned for a Nuclear Power Station at Duynefontein;
- Commission a new Grid Integration Study once the appeal process is finalised, incorporating the most recent data for Nuclear-1; and
- Update the EMPr as new information becomes available, e.g. once a vendor is appointed and detailed design is finalised.

The principal recommendations in terms of **adjudicating the appeal** are that the FEIR remains valid and is fit-for-purpose to inform a decision, subject to:

- Eskom implementing the recommendations listed above once the appeal process has been finalised;
- The Minister reconsidering the merits of an offset as a condition of authorisation in adjudicating the appeal, to take account of the National Biodiversity Offset Guideline;
- The Minister considering the parallel SSR process when adjudicating the appeal;
- The Minister considering the Section 34(1) determination issued in accordance with the Electricity Regulation Act of 2006 for 2 500 MW new nuclear, when adjudicating the appeal; and
- The Minister considering the IRP 2019, which supersedes the IRP 2010, and which considers a mix of energy sources; when adjudicating the appeal.

7 WAY FORWARD

The Review Report including the Issues and Response Summary (and CCIAR) was submitted to the Minister for decision-making. Stakeholders will be informed via email and SMS (where contact details are available) that the final reports were submitted and are available on SRK's website.

