

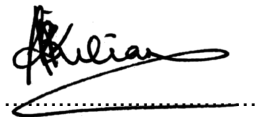
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CHAPTER 1: INTRODUCTION

File name: [1] Eskom Thyspunt SSR Chapter 1 Introduction, Rev 0b

Author declaration:

I declare that appropriate diligence and quality assurance was applied in the compilation of this report. As such I am confident in the results here described and the conclusions drawn.

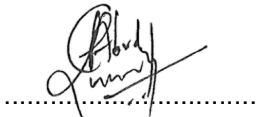


Name: Anita Kilian

Date: 2026-02-05

Peer Reviewer:

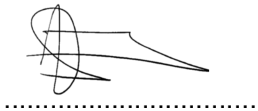
I declare that this report has undergone independent peer review by myself, that comments were addressed to my satisfaction, and that as such, it is considered fit for publication.



Name: Abraham Sunil

Date: 2026-03-31

Eskom Acceptance:



Name: Israel Sekoko

Date: 2026-03-31

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AMENDMENT RECORD			
Rev	Draft	Date	Description
0	-	April 2015	New chapter.
0a	-	January 2025	Chapter updated in line with NNR review comments and to align to the latest template on structure and layout of Site Safety Reports.
0b	-	February 2026	Chapter updated to address NNR review comments.

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EXECUTIVE SUMMARY

This Site Safety Report (SSR) presents the information on the evaluation of the suitability of the Thyspunt site, a greenfield site, for locating a new nuclear installation(s).

The site is situated in the Eastern Cape between the towns of Humansdorp (north), St. Francis Bay (east) and Oyster Bay (west), bounded to the south by the Indian Ocean, with the provisional site centroid having the following coordinates:

- -
 -
 -
- Redacted

The licence applicant/holder is Eskom Holdings SOC Limited (Reg. No 2002/015527/06, Republic of South Africa).

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1 INTRODUCTION

This Site Safety Report (SSR) presents the site characteristics of the Thyspunt site (hereinafter referred to as '*the site*', see **Figure 1.1**), a greenfield site, for locating a new nuclear installation(s). It is an update of the Thyspunt SSR (TSSR) Rev 0a (Eskom, 2025).

The TSSR describes the Thyspunt site and its surrounds, including the hazards associated with the site, enables an evaluation of the suitability of the site to accommodate new nuclear installation(s), and provides site specific technical input for the design and safe operation of the nuclear installation(s) proposed to be located on the site. It contains information on site suitability, potential external events that could impact the safe operation(s) of the installation, the potential radiological impact on public and environment; feasibility of developing and implementing emergency plans; security and quality assurance (see **Table 1.1**).

Eskom Holdings SOC Limited (hereafter referred to as Eskom) is considering the construction of a new nuclear installation(s) with planned capacity of up to 4 000 MWe (13 200 MWth), and an eventual total site capacity of up to 10 000 MWe (c. 33 000 MWth), the design of which has not yet been selected. In the absence of a selected plant design, Eskom has given priority to completing this SSR for the site using a plant parameter envelope (Eskom, 2024), while its associated enveloping liquid and gaseous source terms are given in **Chapter 7** and source terms for severe accidents and postulated reference accidents are given in **Chapter 8**.

1.1 Site Location

The site is situated in the Eastern Cape between the towns of Humansdorp (north), St. Francis Bay (east) and Oyster Bay (west), bounded to the south by the Indian Ocean (see **Figure 1.1**), with the provisional site centroid having the following coordinates:

Redacted

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Figure 1.1
Location of the Thyspunt Site

1.2 Purpose of the Site Safety Report

The objective of this SSR is to provide the required information about the characteristics of the site in accordance with Eskom's requirements whilst also fulfilling the relevant national nuclear safety requirements, i.e. National Nuclear Regulator (NNR) Act (Republic of South Africa, 1999) as amended (Republic of South Africa, 2024) and the Regulations on Licensing of Sites for New Nuclear Installations (Department of Energy, 2011).

The following are the specific objectives to fulfil the purpose of this SSR:

- Provide an update of the site characteristics information;
- seek in advance NNR review and approval on the suitability of the site for a new nuclear installation(s) to address potential problems that may hinder the execution of the subsequent licensing stages;

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- characterise the site and its environment with regard to its potential natural and man-made hazards that could impact on the design and safety of the nuclear installation(s);
- identify physical characteristics that could pose a significant impediment to the development and implementation of adequate security measures for nuclear installations on the site;
- evaluate the possible cumulative radiological impact to the public and the environment resulting from the proposed facility;
- identify physical characteristics that could pose a significant impediment to the development and implementation of the emergency plan;
- propose emergency planning zones for the site;
- demonstrate that this SSR is the result of a comprehensive, appropriately graded, quality assurance and quality control programme that was applied to the collection of data, its analyses, interpretation and reporting.

1.3 Scope of the Site Safety Report

This SSR presents the relevant characteristics of the site, where nuclear installations with planned capacity of up to 4 000 MWe (13 200 MWth), and an eventual total site capacity of up to a maximum generating capacity of 10 000 MWe (33 000 MWth) are planned to be built (following a phased approach).

The scope of the SSR is informed by Section 3(1) of the Regulations on Licensing of Sites for New Nuclear Installations (Department of Energy, 2011), which requires that any person wishing to site a nuclear installation to lodge an application for a nuclear installation site licence, addressing factors as stipulated in Section 4 of the regulations. Such an application must be supported by an SSR (Section 3.2a) addressing requirements as contained in Section 5 of the regulations. The SSR is further informed by the NNR Interim Guidance for the Siting of Nuclear Facilities (National Nuclear Regulator, 2016).

As such this SSR contains information on the following:

- details of the applicant and the name of the site of interest in **Chapter 1**;
- motivation for choice of the site in **Chapter 4**;

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- the proposed maximum generating capacity for the site in **Chapters 1 and 3**;
- overview of planned activities at the site in **Chapter 3**;
- scope and extent of the investigation activities in **Chapter 4**;
- site characteristics in **Chapter 5**;
- identification and quantification of the magnitude and probability of occurrence of external events and hazards in **Chapter 6**;
- an analysis of the impact on the public due to normal operations of the new nuclear installation(s), including minor occurrences that can be kept under control, to demonstrate compliance with dose limits in **Chapter 7**;
- A Probabilistic Risk Assessment (PRA) to demonstrate compliance with the probabilistic risk limits in **Chapter 8**;
- feasibility of developing and implementing an emergency plan and the identification and determination of emergency planning zones in **Chapter 8**;
- an assessment on the suitability of the site, from a nuclear security perspective as determined by the NNR in **Chapter 9**;
- description of the quality management system used to compile this SSR in **Chapter 10**;
- measures implemented to assist with management of uncertainties (all chapters);
- the monitoring programmes that have been implemented and are reported on in this SSR, and recommended on-going monitoring **Section 5.2**;
- conclusions on site suitability and compliance with regulatory requirements and criteria in **Chapter 11**.

The terms used in this SSR are in line with the national legislation and the Eskom Nuclear Sites Glossary of Definitions, Terms and Abbreviations (Eskom, 2026). International experience and standards were used wherever possible and relevant.

This SSR will be updated at regular intervals in line with the requirements

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as contained in the siting regulations (Department of Energy, 2011) and the NNR Interim Guide for the Siting of Nuclear Facilities (National Nuclear Regulator, 2016) and safety re-evaluations/re-assessments during periodic reviews.

1.4 Structure of the Site Safety Report

This document is structured in such a way that allows compliance to requirements as contained in the siting regulations. Each chapter/section has been compiled according to a technical specification (Eskom, 2022). **Table 1.1** presents a summarised description of each chapter/section.

Table 1.1
Structure of this Site Safety Report

Chapter	Title	Description
1	INTRODUCTION	Introduces the purpose and scope of this SSR. It also provides description on the location of the site and estimated total electrical/thermal capacity at the site.
2	LEGAL AND REGULATORY BASIS	Specifies acts and regulations applicable to nuclear siting and site evaluation. This SSR also provides alternative regulatory solutions in accordance with internationally accepted standards/recommendations for regulatory compliance, including the adoption of selected guides, codes and standards.
3	OVERVIEW OF PLANNED ACTIVITIES AT THE SITE	Describes the site development, planned site activities and generic layout for the site.
4	SITE INVESTIGATION APPROACH	Outlines the approach, rationale and process followed to select suitable sites. This includes strategic screening from national and regional level through ranking of many candidate sites to the selection of the most suitable sites. This chapter also describes the main activities that were carried out to assess and update the site characteristics from a suitability perspective for the siting of a new nuclear installation(s).

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Chapter	Title	Description
5	SITE CHARACTERISTICS (DETAILED ANALYSIS)	Provides detailed information about the site specific characteristics and the surrounding environment. This includes geography and site location; monitoring; ecology; demography; land and water use; adjacent sea use; nearby transportation, industrial and military facilities; meteorology; oceanography and coastal engineering; hydrology and hydraulics; geohydrology; water supply; geology; seismic hazard; and geotechnical characterisation. This chapter also identifies sources of potential external hazards within the site area and the surrounding environment.
6	EVALUATION OF EXTERNAL EVENTS	Presents the evaluation of potential natural and human-induced external events that are relevant for the nuclear installation(s) at the site.
7	POTENTIAL RADIOLOGICAL IMPACT ON THE PUBLIC AND THE ENVIRONMENT	Presents a preliminary dose assessment to the public during normal operations using an enveloping approach to demonstrate that the radiological consequences from normal operation and postulated events associated with the nuclear installation(s) will be acceptably low and within the regulatory limits.
8	EMERGENCY PLANNING	Identifies all physical characteristics of the site that could pose a significant impediment to the feasibility of the emergency plan for the site. The chapter includes a Probabilistic Risk Assessment (PRA) using a bounding envelope, to demonstrate compliance with the regulatory limits. The chapter also proposes Emergency Planning Zones for the site and required actions to implement protective measures at each zone.
9	PHYSICAL PROTECTION AND SECURITY	Presents the results from the assessment performed to investigate the suitability of the site from a security point of view. This include a statement from the national security authorities and the required measures to ensure physical protection and security of the site.
10	MANAGEMENT SYSTEM	Describes the management system according to which the site characterisation activities were performed.

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Chapter	Title	Description
11	CONCLUSIONS	Summarises the overall conclusions in terms of site suitability, regulatory compliance and management of uncertainties.

The detailed information supporting this SSR (e.g. technical reports, monitoring data, calculations and excel sheets) is presented in appendices attached to or referenced in the individual chapters and sections of this SSR.

1.5 Details of Applicant

The details of the applicant are the following:

Eskom Holdings SOC Limited

Reg. No 2002/015527/06

Registered in South Africa

Physical Address of Head Office:

Eskom

Megawatt Park

Maxwell Drive

Sunninghill

Sandton 2157

Postal Address of Head Office:

Eskom

PO Box 1091

Johannesburg 2000

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1.6 References

1. Department of Energy, 2011. *R.927: The Regulations on Licensing of Sites for New Nuclear Installations*, Government Gazette 34735. Pretoria: Government Gazette.
2. Eskom, 2022. *Technical Specification for Site Safety Reports, NSIP01388*. Cape Town: Eskom.
3. Eskom, 2024. *Plant Parameter Envelope Standard, NSIP03179*. Cape Town: Eskom.
4. Eskom, 2025. *Thyspunt Site Safety Report, Rev 0*. Cape Town: Eskom.
5. Eskom, 2026. *Nuclear Sites Glossary of Definitions, Terms and Abbreviations, NSIP01351*. Cape Town: Eskom.
6. National Nuclear Regulator, 2016. *Interim Guidance for the Siting of Nuclear Facilities, RG-0011*. Centurion: National Nuclear Regulator.
7. Republic of South Africa, 1999. *National Nuclear Regulator Act No. 47 of 1999*. Pretoria: Government Gazette.
8. Republic of South Africa, 2024. *National Nuclear Regulator Amendment Act, 2024 (Act No.26 of 2024)*. Pretoria: Government Gazette.