

## **EXECUTIVE SUMMARY**

### **BACKGROUND AND PROJECT DESCRIPTION**

Eskom Holdings (SOC) Limited has applied, in accordance with the regulations R.927 (regulations on licensing of sites for new nuclear installations), for a nuclear installation site licence (NISL) for the Thyspunt site. The purpose of the NISL application is to licence Thyspunt as a nuclear site for a new nuclear installation(s).

The NISL application is equivalent to an early site permit (ESP) application (Safety Evaluation Report review leg) in the United States, through which a site may be licensed, independent of a specific nuclear power plant design, as suitable for the construction and operation of a nuclear power plant.

This Public Information Document (PID) serves to provide members of the public with information on the analyses and assessments that support the Eskom NISL application.

The specifics of the nuclear installation design does not form part of the NISL application. It is Eskom's plan to subsequently apply for nuclear installation licences to construct and operate multiple nuclear installations on the site, at which time Eskom will be required to provide detail on the installation's design and layout. However, to show compliance with NNR requirements, on among others, radiological dose and risk, preliminary design and operation information was used in the Thyspunt Site Safety Report (TSSR). Since the TSSR is based on site-specific data in conjunction with preliminary enveloping data on the proposed nuclear installation, the conclusions of the TSSR will be confirmed by definitive safety analyses performed in support of the application for subsequent nuclear installation licences.

### **SITE DESCRIPTION**

The Thyspunt site is located on the South African south coast approximately 4 km east of Oyster Bay, 12 km west of St. Francis Bay and 17,3 km south of Humansdorp (distances measured from the site centroid to the nearest town boundary).

There are no highways that traverse the site. The main access road to the site is by an unsurfaced secondary road to Oyster Bay. An alternative route is via an unsurfaced branch road from the tarred R330 road from Humansdorp to St. Francis Bay.

The airfields in the region are predominantly small civil airfields and emergency landing strips located on farms. Most are unregistered facilities used for private purposes with no structures or buildings. The Port Elizabeth International Airport, located 85 km to the east of the site is the nearest major airport to the site. There are no military facilities within 80 km of the site.

There are no railway lines that traverse the site.

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The Port Elizabeth and Ngqura (Coega) harbours, located beyond 80 km from the site, are the largest commercial harbours in the broader region. A small craft harbour at Cape St. Francis, located 13,9 km to the east, consists of a breakwater with an inside basin for commercial fishing vessels, with mooring at concrete jetties and a section with a slipway facility for small recreational vessels.

## **SAFETY JUSTIFICATION**

The Thyspunt site has been extensively investigated with regard to all the site characteristics that could have an impact of the safety on the proposed nuclear installation(s). In addition, the potential impact of radiological events in normal operational states and in accident conditions was also evaluated.

Appropriate methods following international codes and standards and safety were adopted and applied throughout, for example, a state-of-the-art methodology, the senior seismic hazard analysis committee (SSHAC) Level 3 approach was followed to determine the seismic hazard for the site.

Based on the studies performed it is concluded that the natural and human-induced external events associated with the Thyspunt site does not preclude the site from the establishment of a nuclear installation. External events were either:

- Screened out from being considered further as a design bases;
- Screened out conditionally on the basis that the status be confirmed when the specific design is selected; or
- Will be compensated for by means of:
  - Design features of the envisaged nuclear installation; or
  - Site protection measures.

In the evaluation of the site to determine its potential radiological impact on the region for normal operational states and accident conditions, appropriate estimates of expected or potential releases of radioactive material were derived, with account taken of the enveloping characteristics of proposed facilities to be constructed on the site and its safety features.

The direct and indirect pathways by which radioactive material could reach and affect people and the environment were investigated and evaluated, taking into account specific regional and site characteristics.

The radiological dose assessment indicates that the annual effective dose to the hypothetical critical group associated with normal operation and minor occurrences is less than 72  $\mu\text{Sv/a}$ . This confirms that the site is suitable to locate a new nuclear installation(s) and that the annual dose to the public will be within the National Nuclear Regulator dose constraint requirement of 250  $\mu\text{Sv/a}$ .

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The assessment of emergency preparedness and response concluded that there are no significant impediments that could affect the feasibility of developing and implementing an emergency plan. Furthermore, to ensure the viability of the site and the feasibility of developing an emergency plan, it is recommended that regulatory control and/or monitoring of development within the emergency planning zones surrounding the site be implemented.

## **CONCLUSION**

Detail on the analyses and assessments performed to assess the suitability of the Thyspunt site are documented in the Thyspunt Site Safety Report. The comprehensive nature of the studies and the diligence with which they were performed forms the justification for Eskom's NISL application. Care was taken to ensure that all hazards that could result in ionising radiation have been identified and that their associated radiological impact can be kept as low as reasonably achievable. It can therefore be concluded that:

- The radiological dose to the public will be acceptably low and within regulatory limits.
- No significant impediments to the development of an emergency plan have been identified.
- All identified hazards were assessed and either screened out or can be dealt with in the nuclear installation(s) design.
- Adequate security measures can be put in place.
- No anomalous or critical data or trends were detected.

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