

EXECUTIVE SUMMARY: SCOPING REPORT

ENVIRONMENTAL IMPACT ASSESSMENT OF THE USED FUEL TRANSIENT INTERIM STORAGE FACILITY AT KOEBERG NUCLEAR POWER STATION

July 2016 SRK Project Number: 478317

This Executive Summary is identical in most respects to the previous draft version. Changes made to the Executive Summary are underlined and italicised for ease of reference

1 INTRODUCTION

Eskom proposes to construct a Transient Interim Storage Facility (TISF) for the temporary storage of dry casks at the Koeberg Nuclear Power Station (KNPS) (Figure 1). These casks will store used nuclear fuel from the reactors of the power station.

The TISF will comprise of concrete pad(s) within a site footprint of approximately 12 800 m² and will be designed to accommodate storage of not more than 160 casks, for used nuclear fuel generated at the KNPS up to the end of operational life of plant.

SRK Consulting (South Africa) Pty Ltd (SRK) has been appointed by Eskom to undertake the Scoping and Environmental Impact Reporting (S&EIR, also referred to as Environmental Impact Assessment [EIA]) process required in terms of the National Environmental Management Act 107 of 1998, as amended (NEMA), and the EIA Regulations, 2014.

See page 7 for details on how you can participate in the process.

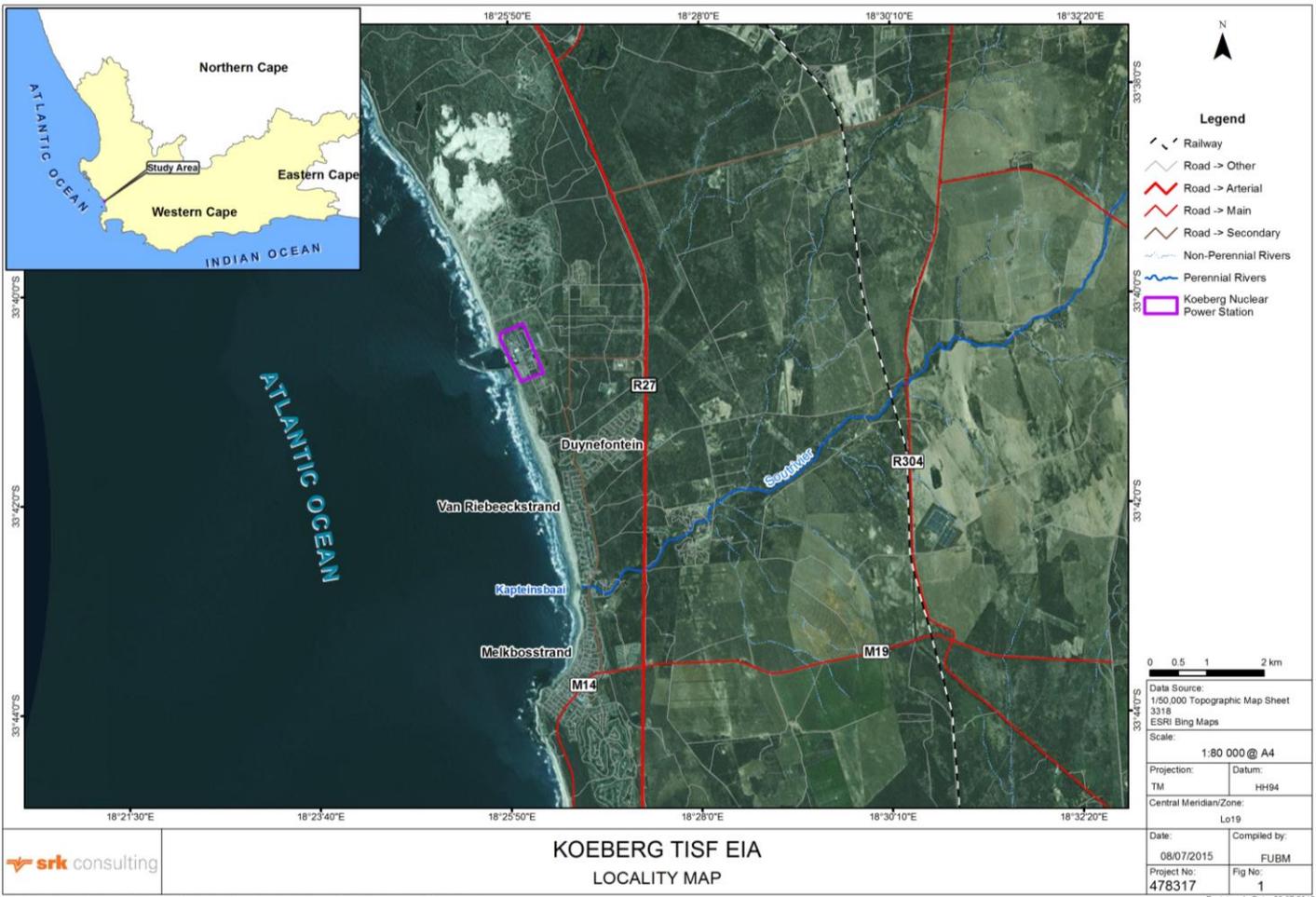



Figure 1: Locality Map

2 GOVERNANCE FRAMEWORK

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an Environmental Authorisation (EA) issued by the competent authority, in this case, the National Department of Environment Affairs (DEA). The EIA Regulations, 2014 (Government Notice (GN) R982), promulgated in terms of NEMA, govern the process, methodologies and requirements for the undertaking of EIAs in support of EA applications. The EIA Regulations are accompanied by Listing Notices (LN) 1-3 that list activities that require EA.

The EIA Regulations, 2014, lays out two alternative authorisation processes. Depending on the type of activity that is proposed, either a Basic Assessment (BA) process or a S&EIR process is required to obtain EA. LN 1 lists activities that require a BA process, while LN 2 lists activities that require S&EIR. LN 3 lists activities in certain sensitive geographic areas that require a BA.

SRK has determined that the proposed project triggers activities listed in terms of LN 1, LN 2 and LN 3 of the EIA Regulations, 2014, requiring a S&EIR. The equivalent activities in terms of the EIA Regulations, 2014, are included in Table 1.

Table 1: Listed activities triggered by the project

No	Description
LN1 (requiring BA)	
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.
LN2 (requiring S&EIR)	
3	The development and related operation of facilities or infrastructure for nuclear reaction including energy generation, the production, enrichment, processing, reprocessing, storage or disposal of nuclear fuels, radioactive products, nuclear waste or radioactive waste.
LN3 (requiring BA in the sensitive areas)	
12	The clearance of an area of 300 square metres or more of indigenous vegetation. (a) In Western Cape: (i) Within any critically endangered or endangered ecosystem.

Consequently, the proponent is obliged to apply for EA for the project. Since activities listed under LN 2 apply to the project, an S&EIR process is required.

In addition to the EA, various other key authorisations, permits or licences may be required before the project may proceed (see Table 2).

Table 2: Key authorisations, permits and licences required for the project

Application	Authority	Status
Heritage Application	Heritage Western Cape (HWC)	<i>HWC confirmed no further heritage studies required (Ref 16022313AS0224E, 16 March 2016)</i>
Water Use Licence (WUL)	Department of Water and Sanitation (DWS)	<i>DWS confirmed no WUL will be required for the project (Ref. 16/27G200/A/8, 10 May 2016)</i>
NNR Licence Amendment	National Nuclear Regulator (NNR)	<i>Planned to be submitted ~ September 2017</i>

3 ENVIRONMENTAL PROCESS

The EIA Regulations, 2014, define the detailed approach to the S&EIR process, which consists of two phases: the Scoping Phase (the current phase) and the Impact Assessment Phase (see Figure 2).

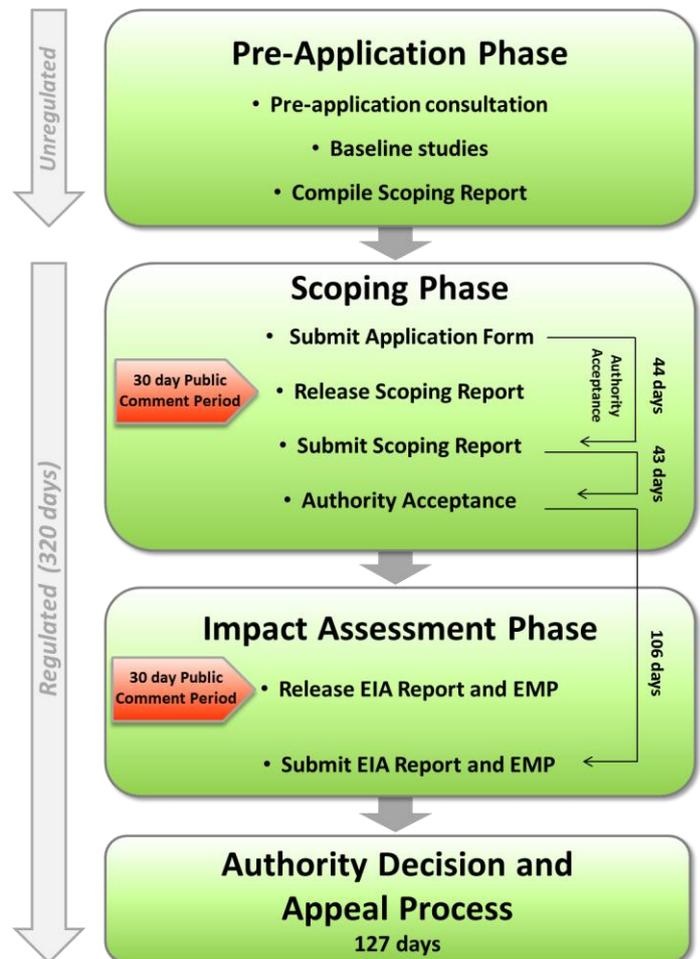


Figure 2: S&EIR Process

The objectives of the Scoping Phase are to:

- Identify stakeholders and inform them of the proposed activity, feasible alternatives and the S&EIR process;
- Describe the affected environment and potential environmental issues and benefits arising from the

proposed project that may require further investigation in the Impact Assessment Phase;

- Develop terms of reference for specialist studies to be undertaken in the Impact Assessment Phase;
- Provide stakeholders with the opportunity to participate in the process and identify any issues or concerns; and
- Produce a Scoping Report for submission to the relevant authorities.

Once the Scoping Phase has been completed, the Impact Assessment Phase will commence, in which the significance of potential impacts will be assessed and measures to avoid and /or mitigate negative impacts and enhance benefits will be determined.

4 DESCRIPTION OF THE SITE AND ENVIRONMENT

The KNPS is located on Cape Farm Duynefontyn No. 1552 along the sandy coastline of the West Coast, approximately 27 km north of the Cape Town Central Business District and 1.5 km north of the residential area of Duynefontein (Figure 1). Access to the KNPS is via the R27 which runs along the property's eastern boundary or alternatively via Otto du Plessis Drive.

The topography of the area is relatively flat with an active dunefield extending north of the KNPS. A stabilised primary dune inland of the KNPS screens many of the KNPS buildings although the two nuclear reactor units are prominent landmarks in the region (Figure 3).



Figure 3: The KNPS as viewed from the Duynefontein residential area

The vegetation of the area consists of low coastal shrub (Cape Dune Strandveld and Atlantis Fynbos), typical of much of the West Coast region (Figure 3). The KNPS is located within the Koeberg Nature Reserve, a 3 000 ha reserve managed by the

Koeberg Managing Authority. The Atlantic Ocean forms the western boundary of the KNPS.

There are a variety of land uses immediately surrounding the KNPS including the Duynefontein residential area to the south, the Koeberg Nature Reserve to the north, south and east.

The KNPS is located within a predominantly natural environment, although there are existing built elements throughout the property including powerlines, office buildings, a visitors centre, weather station, roads and parking areas.

The TISF will be located within the Security Protected Area (SPA) of the KNPS (Figure 5), a flat area disturbed by previous construction activities and by current operations at the KNPS.

5 PROJECT MOTIVATION

At the KNPS, the majority of used fuel assemblies from the nuclear reactors are stored under water in spent fuel pools (SFPs) for cooling. These SFPs are nearing capacity – the KNPS Reactor Unit 1 and Reactor Unit 2 will have filled their SFPs by March 2018 and September 2018, respectively.

Due to the uncertainty regarding the development of a Central Interim Storage Facility (CISF), only likely to be in operation by 2025, it has become imperative for Eskom to investigate interim options for the storage of used fuel on the KNPS site. Additional storage capacity will be required to accommodate any further used fuel generated at the KNPS. Eskom consequently developed the Koeberg Spent Fuel Storage Project strategy which caters for the KNPS' used fuel storage needs until 2025 and comprises of three phases described below:

- **Phase 1:**
 - *Phase 1A:* Procurement of seven metal dry storage casks to ensure the Reactor Units can operate beyond 2018, without exceeding the SFP capacity. A number of used fuel assemblies will be transferred from the SFPs into the new dry storage casks. These casks will be stored with the four existing metal dry storage casks in the on-site cask storage building (CSB).
 - *Phase 1B:* Procurement and placement of spent fuel inserts to gain back the currently unoccupied storage cells in the SFPs due to a checker-boarding arrangement. This will open up previously unusable storage cells in the

SFPs, allowing for an increase in the total number of used fuel assemblies that can be stored in the SFPs.

- **Phase 2:** Procurement of approximately 30 - 40 additional dry storage casks to allow ongoing operation of the KNPS until 2025.
- **Phase 3:** Establishment of the TISF for the storage of the casks procured in Phase 2.

Used fuel assemblies generated beyond 2025 will also be stored in casks at the TISF should the CISF not be available.

6 PROJECT DESCRIPTION

The TISF will be constructed on a portion of vacant land within the KNPS SPA. The TISF will comprise of concrete pad(s) within a site footprint of approximately 12 800 m².

*The **Security Protected Area** is a restricted area surrounding the reactor units to which only authorised personnel have access. The SPA is distinct from the protected area status of Koeberg Nature Reserve.*

The TISF will be constructed to accommodate up to 160 dry storage casks, which will be placed on the pad(s) in a modular manner over time.

***Dry cask storage** is a method of storing used fuel that has already been cooled in the SFP. Casks are typically concrete or steel cylinders which are either welded or bolted closed to provide leak-tight containment of the used fuel. The used fuel assemblies within the casks are surrounded by inert gas and each cylinder is surrounded by additional steel, concrete, or other material to provide radiation shielding to workers and members of the public. Heat generated from used fuel radioactive decay will dissipate through the external surface of the dry casks.*

The dry storage casks will be either metal or concrete casks or concrete assemblies and will be approximately 6 m in height and 3 m in diameter (Figure 4). Each cask can hold up to 37 assemblies depending on the cask design. The dry storage casks are robust and can withstand significant external impact forces such as an aircraft crash.

The design of the concrete pad(s) of the TISF lends itself to various types of dry storage casking systems.

The TISF site will also include an auxiliary building to house ancillary equipment.

A secure perimeter fence will be erected around the TISF site with controlled access.

The TISF will meet the requirements of the NNR and will be built and managed in accordance with the International Atomic Energy Agency safety standards. Construction of the TISF will commence in 2018 and will take approximately 12 months to complete. The construction laydown area will be located within the proposed TISF site to reduce the disturbance footprint.



Figure 4: Example of a TISF

Source: <http://gtsi.com/wp-content/uploads/2015/01/DryCaskStorage.jpg>



Figure 5: Example of a TISF

Source: <http://berniesteam.com/wp-content/uploads/2012/12/DSC02774.jpg>

Note: These images are provided as examples and are not intended to indicate the selected technology.

Temporary site offices and a parking area for construction vehicles and equipment will also be located in this area.

The dry storage casks will be transferred from the SFP to the TISF on the existing KNPS internal road network. A new site access road of approximately 100 m and between 4 m and 8 m in width will be required for Alternative 1.

The TISF will be decommissioned in accordance with the KNPS decommissioning plan.

7 ALTERNATIVES

Appendix 2 Section 2 (h)(i) of the EIA Regulations, 2014, requires that all S&EIR processes must identify and describe feasible and reasonable alternatives. Different types or categories of alternatives can be identified, e.g. location alternatives, type of activity, design or layout alternatives, technology alternatives and operational alternatives. Not all categories of alternatives are applicable to all projects.

Eskom identified six potential sites at Koeberg for the location of the TISF, which were evaluated against various criteria. The site selection process identified two viable site locations for the TISF (refer to Figure 5) - the CSB site, the preferred alternative (Alternative 1), and the Ekhaya site (Alternative 2). Alternative 1 is located adjacent to the CSB on the northern boundary of the KNPS and Alternative 2 is located along the southern boundary of the KNPS next to the Ekhaya Building.



Figure 6: TISF Location alternatives

Alternative 1 is Eskom’s preferred alternative because:

- It is situated adjacent to an existing radiological zone (low level waste facility);
- It is located within a more ecologically disturbed area compared to Alternative 2; and
- Less extensive haul road upgrades will be required than for Alternative 2.

The No Go alternative will be considered in the EIA in accordance with the requirements of the EIA Regulations, 2014. The No Go alternative entails no

change to the status quo, in other words the proposed TISF will not be built.

8 STAKEHOLDER ENGAGEMENT

Stakeholder engagement forms a key component of the S&EIR process and is being undertaken in accordance with Chapter 6 of the EIA Regulations, 2014. The stakeholder engagement activities related to the Pre-Application and Scoping Phases are summarised in Table 3.

Relevant local, provincial and national authorities, conservation bodies, local forums and surrounding

landowners and occupants have been notified of the S&EIR process.

An initial stakeholder registration and comment period was allowed during the Pre-Application Phase, following the release of a Background Information Document (BID).

In March 2016 a (Pre-Application) Draft Scoping Report was released for a 30 day comment period. All registered stakeholders were notified of the release of the Draft Scoping Report for comment.

Following submission of the Application Forms to the DEA, the Scoping Report, addressing issues raised during the Pre-Application Phase, will once again be released for a 30 day comment period.

Table 3: Stakeholder engagement during Pre-Application and Scoping Phases

Activity	Date
Pre-Application	
Advertise release of BID for I&AP registration	08 October 2015
Public comment period	09 October - 09 November 2015
Public Open Day	27 October 2015
Release Draft Scoping Report for comment	16 - 18 March 2016
Public comment period	18 March - 25 April 2016
Scoping	
Advertise commencement of EIA process and release Scoping Report to the public	4 – 7 July 2016
Public comment period	8 July – 8 August 2016
Public Open Day	21 July 2016

9 POTENTIAL IMPACTS

The impacts of a project are mostly linked to the sensitivity of the receiving environment and proximity of receptors, the extent or footprint and nature of the development, potential risks in an emergency situation and stakeholders’ perceptions.

Based on the above considerations as well as the professional experience of the Environmental Assessment Practitioner, the following potential negative impacts and potential benefits of the project in its proposed setting – have been identified.

Geohydrology – The construction of the TISF may potentially impact on groundwater levels and quality although this is unlikely as groundwater at the project site is deeper than the proposed TISF excavation depth. Dewatering of excavations will probably not be required during construction;

Terrestrial ecology – Due to the ecological sensitivity of both TISF site alternatives and the presence of sensitive vegetation types, the project may negatively impact threatened and/or protected floral species. The project does not pose a threat to threatened or protected faunal species;

Socio-economic – Potential negative impacts on the surrounding communities would be associated with an increase in nuisance factors (e.g. poor noise and air quality conditions during construction). Potential economic benefits are expected due to increased employment opportunities during the construction phase. The TISF will also ensure the continued operation of the KNPS, a significant electricity producer in the Western Cape;

Radiation and Human Health – The potential exposure of Eskom employees as well as individuals in surrounding communities to radiation due to the handling and storage of used fuel at the TISF and the potential negative impacts on human health of is expected to be a key concern to stakeholders;

Heritage – Although the West Coast is known for its wealth of fossil and shell middens, both TISF site alternatives are considered significantly disturbed by previous construction activities and in terms of the heritage landscape, the possibility of finding sites of archaeological or palaeontological importance is highly unlikely; and

Visual – The sense of place of the study area is determined by the KNPS infrastructure located in a predominantly natural setting and influenced by the proximity to the coast. The TISF will be located in the KNPS Protected Area, a substantially modified landscape and is therefore unlikely to have significant negative visual impacts for receptors.

Certain impacts are considered likely to be less significant, including land use, air quality, noise, traffic, surface water and stormwater impacts.

10 PLAN OF STUDY FOR THE IMPACT ASSESSMENT

To address the potential issues and impacts identified thus far, the following **specialist studies** are proposed:

- Geohydrology Specialist Study;
- Terrestrial Ecology Specialist Study;
- Socio-economic Specialist Study;
- Review of Radiological Assessment;
- Human Health Specialist Study;
- Heritage Specialist Study; and
- Visual Specialist Study.

The update of the Emergency Response Plan for KNPS falls outside the scope of the EIA and Environmental Management Programme (EMPr) and will be undertaken/commissioned at a later stage.

Specialists will be required to provide detailed baseline information and to identify and assess the potential impacts of the proposed project within their particular field of study. In addition, specialists will be required to identify practicable mitigation and optimisation measures to avoid or minimise potential negative impacts and/or enhance any benefits. SRK's standard impact rating methodology will be employed in the assessment of impacts.

Once specialist studies have been completed, the results will be collated into an EIA Report and EMPr. The EIA Report and EMPr will be released for public comment through notifications to registered Interested and Affected Parties (I&APs). Key authorities will also be consulted as part of the process.

All comments received will be incorporated into a Comments and Responses Summary which will be appended to the EIA Report. The EIA Report and EMPr will then be submitted to the DEA for their consideration in decision-making.

HOW CAN YOU PARTICIPATE IN THE EIA PROCESS?

The Draft Scoping Report is not a final report and can be amended based on comments received from stakeholders. Issues and concerns identified in the Scoping Study will assist in focussing the EIA and will be used to refine the terms of reference for specialist investigations. Stakeholders are therefore urged to participate:

REVIEW THE REPORT

Copies of the complete report are available for public review at the following locations:

- Koeberg Public Library, Duynefontein;
- Wesfleur Public Library, Atlantis;
- Cape Town Public Library;
- KNPS Visitors Centre; and
- SRK's office in Rondebosch; and
- SRK's website: www.srk.co.za – click on the 'Library' and then 'Public Documents' links.

I&APs are invited to comment, and/or to register on the project database. I&APs must provide their comments together with their name, contact details (preferred method of notification, e.g. email), and an indication of any direct business, financial, personal or other interest which they have in the application, to the contact person below, by **8 August 2016**.

Relevant Organs of State have been automatically registered as stakeholders. According to the EIA Regulations, 2014 all other **persons must request in writing to be placed on the register, submit written comments or attend meetings in order to be registered as stakeholders** and be included in future communication for the project.

REGISTER OR PROVIDE YOUR OPINION

Register or send written comment to:

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Comments must reach SRK no later than **8 August 2016** to be included in the Final Scoping Report. Only registered I&APs will be notified of future opportunities to provide comments.

