

BACKGROUND INFORMATION DOCUMENT: Environmental Impact Assessment for the Proposed Used Fuel Transient Interim Storage Facility at Koeberg Nuclear Power Station

SEPTEMBER 2015 SRK PROJECT NUMBER 478317

1 INTRODUCTION

The Koeberg Operating Unit of Eskom (Eskom) proposes to construct a Transient Interim Storage Facility (TISF) for the temporary storage of dry casks at the Koeberg Nuclear Power Station (KNPS) to accommodate used nuclear fuel from the reactors for the operational life of the power station, thereby ensuring the continued operation of KNPS (Figure 1).

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.

This **Background Information Document** aims to:

- Provide a brief motivation and description of the project;
- Briefly describe the affected environment;
- Describe what is involved in the EIA process; and
- Provide information on how you can participate.

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


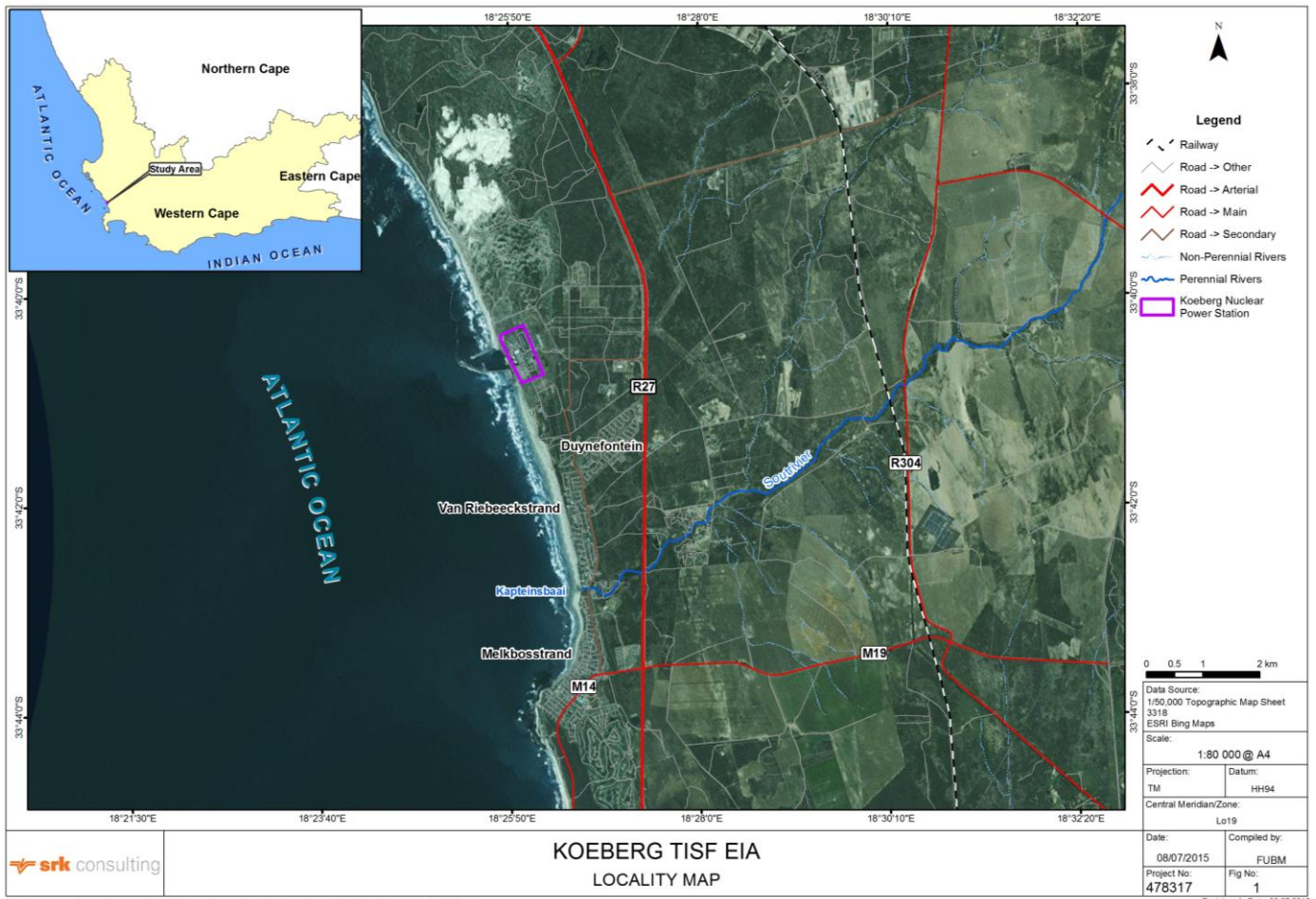



Figure 1: Locality Map

2 PROJECT MOTIVATION AND DESCRIPTION

Used fuel assemblies from the nuclear reactors are stored in spent fuel pools (SFPs) within KNPS. These SFPs are nearing capacity and additional storage capacity is required to accommodate used fuel. KNPS Reactor Unit 1 and Reactor Unit 2 will have filled their SFPs by March 2018 and September 2018, respectively.

Used fuel assemblies are rods of nuclear fuel that have been irradiated in a nuclear reactor to the point where the fuel is no longer useful in sustaining a nuclear reaction. The used fuel assemblies are stored underwater in storage racks in **spent fuel pools**. Water cools the fuel and serves as an effective shield to protect workers in the fuel storage building from radiation (Eskom, 2015).

As the current SFPs are reaching their storage capacity, additional space will be created by moving used fuel from the SFPs into dry storage casks. This strategy forms part of Eskom's Koeberg Spent Fuel Storage Project, which is made up of three phases:

- Phase 1:
 - Phase 1A: Procure seven dry storage metal casks to ensure the KNPS Reactor Units can operate beyond 2018 without reaching SFP capacity by removing some used fuel assemblies. These casks will be stored with four existing metal casks in the on-site Cask Storage Building (CSB).
 - Phase 1B: Procure spent fuel inserts to regain blocked storage cells in the SFPs due to a checker-boarding arrangement.
- Phase 2: Procure approximately 40 additional dry storage casks to allow ongoing operation of KNPS.
- Phase 3: Construct the TISF for the storage of the casks procured in Phase 2.

The TISF will store the used fuel dry storage casks procured during Phase 2 of the Spent Fuel Storage Project.

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 that are either welded or bolted closed to provide leak-tight containment of the used fuel. The used fuel assemblies inside 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 (www.wikipedia.org).

This strategy assumes that a national offsite Central Interim Storage Facility (CISF) is unavailable for use by 2025. Due to the uncertainty of the development of the CISF, the TISF may be required up until the end of the expected operational life of KNPS.

*The **Central Interim Storage Facility** is a proposed central storage facility for nuclear used fuel and waste. The establishment of the CISF is the responsibility of the National Radioactive Waste Disposal Institute.*

The TISF will be constructed on vacant land within the KNPS Owner Controlled Area. The TISF is proposed to comprise of a concrete pad covering an area of approximately 12 800m² onto which up to 160 dry storage casks can be placed. The dry storage casks will be either metal or concrete casks. The TISF will be filled with casks in a modular manner. An auxiliary building to house ancillary equipment will be constructed within the TISF operational area. A secure perimeter fence, with controlled access, will surround the TISF. The TISF will meet the requirements of the National Nuclear Regulator (NNR) and will be built and managed according to International Atomic Energy Agency (IAEA) safety standards.

*The **KNPS Owner Controlled Area** is a restricted area surrounding the reactor units to which only authorised personnel have access.*

Construction of the TISF will commence in 2018 and will take approximately 12 months. The construction laydown area will be located within the proposed TISF operational area to reduce the disturbance footprint. Temporary site offices and a parking area for construction vehicles and equipment will be located in this area. The construction haul routes will use the existing KNPS internal road network.

The dry storage casks are proposed to accommodate used fuel assemblies removed from the reactor units and cooled in the SFPs. The cooling period of used fuel in the SFPs depends on the fuel characteristics and the cask design selected. The dry storage system is a passive system which is not reliant on human action or active components to maintain a suitable safety level. Heat generated from used fuel radioactive decay will dissipate through the external surfaces of the dry casks.

Used fuel assemblies will be loaded into casks at the reactor unit fuel buildings and transferred to the TISF in batches. The sequence of loading and transferring one dry storage cask to the TISF will take approximately 10 working days.

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

3 PROJECT ALTERNATIVES

The EIA Regulations, 2014, require that all S&EIR processes must identify and describe feasible and reasonable alternatives.

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 2) - 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 KNPS and Alternative 2 is located along the southern boundary of KNPS next to the Ekhaya Building.

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.

4 THE AFFECTED ENVIRONMENT

Koeberg is located on a sandy coastline of the West Coast, approximately 27 km north of the Cape Town CBD and 1.5 km north of the residential area of Duynfontein (Figure 3). KNPS is situated on Farm Duynfontyn No. 1552 and access to KNPS is via the R27 which runs along the property's eastern boundary.

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

The vegetation of the area consists of low coastal shrub (Cape Dune Strandveld and Atlantis Fynbos) up to 1.5 m high, typical of much of the West Coast. The Koeberg Nature Reserve, a 3000 ha reserve managed by the Koeberg Managing Authority, surrounds KNPS.

The TISF will be located within the KNPS Owner Controlled Area, on a flat area disturbed by previous construction activities when the reactor units were built and by current operational activities on site. There are no surface water features in close proximity to KNPS.



Figure 3: KNPS from Duynfontein residential area



Figure 2: Site Alternatives

5 ENVIRONMENTAL PROCESS

The EIA Regulations, 2014, list certain activities that are considered potentially harmful to the environment and must undergo an EIA and be authorised by the competent authority before they can be undertaken. The construction of the TISF is likely to involve activities listed in Listing Notice 1 and 3 (requiring a Basic Assessment) and Listing Notice 2 (requiring a S&EIR process):

- Listing Notice 1: Listed activity 27;
- Listing Notice 2: Listed activity 3; and
- Listing Notice 3: Listed activity 12.

Before commencing with the project, Eskom is thus required to undertake a S&EIR process and to obtain authorisation in terms of NEMA from the National Department of Environmental Affairs (DEA). An overview of the S&EIR process proposed for this project is shown in Figure 4.

The aims of the S&EIR process are to:

- Notify stakeholders of the proposed development (and EIA process);
- Provide stakeholders with the opportunity to participate effectively in the process and identify relevant issues and concerns;
- Ensure that stakeholders’ issues and concerns are addressed in the assessment and are accurately recorded and reflected in the Scoping and EIA Reports;
- Assess the potential positive and negative environmental impacts associated with the proposed activity; and
- Make recommendations as to how the potential negative impacts can be effectively mitigated and the benefits enhanced.

Consultation with the public and authorities forms a critical part of the S&EIR process and is intended to provide all stakeholders with opportunities to raise issues and concerns that should be addressed in the S&EIR process and to comment on the documentation submitted to DEA.

SRK plans to conduct a thorough consultation process that makes provision for public meetings as well as focus group meetings with directly affected stakeholders (if necessary) throughout the process.

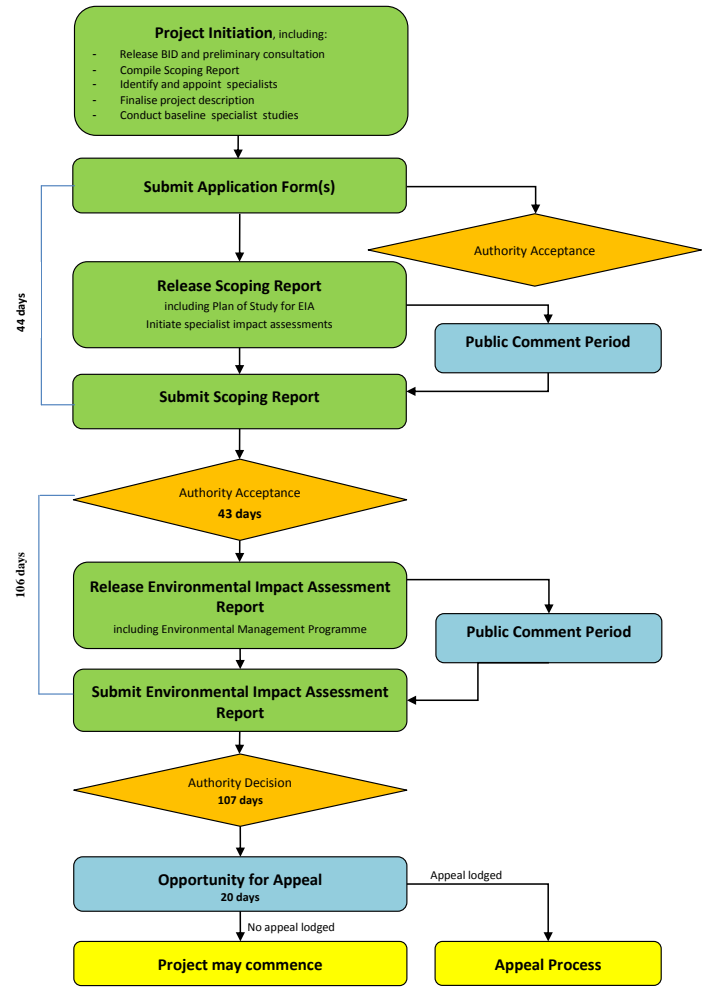


Figure 4: S&EIR Process

In addition to EA, licensing is also required from the NNR.

*The **National Nuclear Regulator** is a public entity established and governed in terms of the National Nuclear Regulator Act 47 of 1999 to provide for the protection of persons, property and the environment against nuclear damage through the establishment of safety standards and regulatory practices (www.nnr.co.za).*

HOW CAN YOU PARTICIPATE IN THE EIA PROCESS?

We value your input into the S&EIR process. If you or your organisation would like to be involved in the S&EIR process, **please submit your contact details for registration as a stakeholder** on our database. Relevant Organs of State will be 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:

Jessica du Toit
SRK Consulting

Postnet Suite #206, Private Bag X18,
Rondebosch, 7701

Tel: + 27 21 659 3060

Fax: +27 21 685 7105

Email: jedutoit@srk.co.za

Please refer to the SRK project number in your submissions. If registering as a stakeholder, please provide your name, contact details (preferred method of notification, e.g. email), and an indication of any direct business, financial, personal or other interest in the application.

ATTEND A MEETING

SRK provides an opportunity for the public to engage with the team and ask questions about the project at a **Public Open Day**:

Venue: Koeberg Nuclear Power Station:
Visitors Centre

Date: Tuesday, 27 October 2015

Time: 15h00 to 19h00

The public are invited to view the information provided at any time during the advertised times and discuss the project with members of the project team.



**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR THE PROPOSED
USED FUEL TRANSIENT INTERIM STORAGE FACILITY
AT KOEBERG NUCLEAR POWER STATION**

SRK PROJECT NO: 478317

STAKEHOLDER REGISTRATION AND COMMENT FORM

Please complete and submit this form by hand, post, fax or email to:

SRK Consulting

Jessica du Toit

The Administrative Building, Albion Springs, 183 Main Road, Rondebosch, 7700

Postnet Suite #206, Private Bag X18, Rondebosch, 7701

Fax: 021 685 7105 Tel: 021 659 3060,

E-mail: jedutoit@srk.co.za

PLEASE PRINT CLEARLY

TO REGISTER AS A STAKEHOLDER:

Name: _____ **Date:** _____

Organisation (if any): _____

Capacity (if applicable): _____

Postal address: _____

_____ **Postal code:** _____

Telephone number: _____ **Fax number:** _____

E-mail: _____

Preferred communication method (email / fax / post): _____

Please indicate any direct business, financial, personal or other interest that you may have in the application:

Any initial comments or concerns that you may have regarding the proposed project can be indicated below and/or on a separate page: