



National  
Nuclear  
Regulator

## South Africa

# Current Status & Plans Regarding Nuclear Safety Regulation & the Use of Atomic Energy

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# Introduction

- The National Nuclear Regulator (NNR) is a public entity which is established & governed in terms of section 3 of the NNR Act, (Act No. 47 of 1999) to provide for the protection of persons, property & the environment against nuclear damage through the establishments of safety standards & regulatory practices.

# Overview of the Regulatory Framework

- The basis for NNR's Regulatory Practices:
  - Exercise regulatory control related to safety through the issuance of nuclear authorizations
  - Nuclear installations as defined in the act can only be sited, constructed, operated and decommissioned under a Nuclear Installation License.
  - Nuclear Vessels either propelled by nuclear power or carrying radioactive material & sojourning or entering the South African territorial waters can only do so under a Nuclear Vessel License.
  - Other actions with the potential of causing nuclear damage are authorized either by a Certificate of Registration or a Certificate of Exemption.
  - In dealing with NORM related applications, exclusion and exemption criteria are established.

# Facilities Regulated by the NNR

# Koeberg Nuclear Power Station

- Construction of the Koeberg Nuclear Power Station began in 1976.
- On 4 April 1984, unit 1 was synchronized to the grid. Unit 2 followed suit on 25 July 1985.
- Koeberg is the only operating Nuclear Power station in Africa, which is owned & operated by Eskom.
- Koeberg has a total installed capacity of 2 X 970MW (1940MW)
- Initially licensed to operate until July 2024.
- Eskom established a plant-life extension programme to prolong operation beyond 2024.
- On July 2022, the safety case was submitted to prolong the plant's lifetime until 2045.



# SAFARI-1 Research Reactor

- Nuclear R&D began in 1944 after UK requested for assistance in obtaining Uranium.
- September 1948, the Atomic Energy Board (AEB) was established
- In 1961, the construction of National Nuclear Research Centre & the SAFARI-1 research reactor commenced at Pelindaba.
- The SAFARI-1 research reactor went critical in 1965.
- The RR is currently under Ageing Management to extend its operational life until 2030 & will be replaced by a multipurpose reactor.

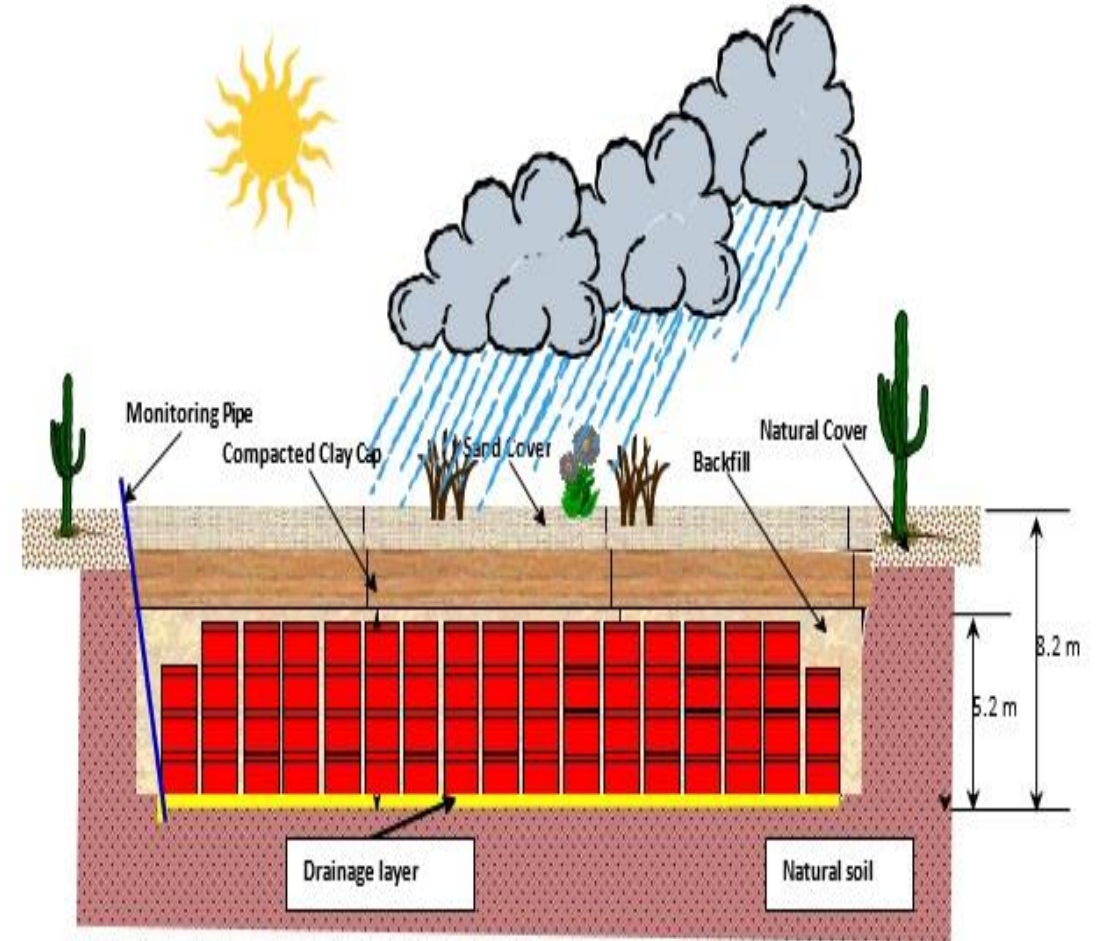


# Vaalputs Radioactive Waste Disposal Facility

Vaalputs is based on shallow land disposal consisting of near surface trenches which are a few meters deep but above the groundwater table.

The trench area is in thick loamy clay with geotechnical properties that include:

- Groundwater table at 55 m.
- High evaporation and transpiration rate.
- Clay contents that confines and retards nuclide migration.
- Slow underground water movement.
- Trivial vertical replenishment of aquifers.
- Few tectonic features in the alluvial fan.
- Low seismic activity.





# Vaalputs Radioactive Waste Disposal Facility

- Under its nuclear installation license Vaalputs disposes of Low Level Waste (LLW), which currently mainly originates from Koeberg Nuclear Power Station and SAFARI-1.
- Radiological safety is implemented through the nuclear license requirements for Vaalputs as per Nuclear Installation License (NIL-28).
- Radiological Safety is carried out under the supervision of the Radiation Protection Officer (RPO).

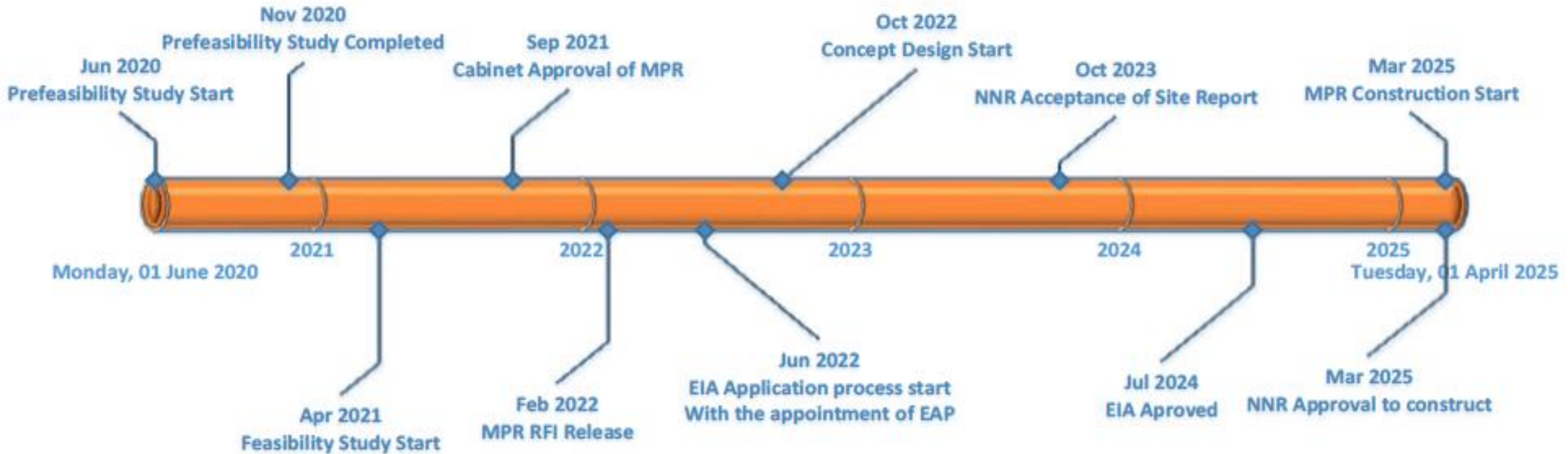


# Current Developments

# Replacement of SAFARI-1 with a Multi-Purpose Reactor (MPR)

- September 2021, the cabinet approved the MPR to replace SAFARI-1.
- According to the Framework for Infrastructure Delivery & Procurement Management (FIDPM), the project has been approved for the first 2 stages:
  - Stage 1 – Project initiation/Pre-feasibility stage
  - Stage 2 – Feasibility stage (current stage)
- February 2022, Request for Information (RFI) was issued.
- The purpose of RFI is to gather information that can be used in the development of the User Requirement Specification (URS) and updating of the Feasibility report.
- The RFI assessment report is being finalized & the project team has started to update the Feasibility Report.

# Replacement of SAFARI-1 with a Multi-Purpose Reactor (MPR)



High level milestones subject to change based on regulatory approvals.

# New Nuclear Build

- Decision 8 in the Integrated Resources Plan of 2019 (IRP 2019) proposes that South Africa commences with preparations for a nuclear build programme to the extent of 2500 MW at a pace and scale that the country can afford.
- Eskom submitted the application for the Nuclear Installation Site License (NISL) for Duynefontein and Thyspunt nuclear sites in 2015 and 2016 respectively.
- NISL for Duynefontein has been approved.
- NISL for Thyspunt is still under review.



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Thank you

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