



Expansion of the Diesel Storage Facilities at the Koeberg nuclear Power Station, Western Cape

Environmental Compliance Monitoring - Close Out Report

September 2019

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Eskom Holdings SOC Ltd
Expansion of the Diesel Storage Facilities at the Koeberg nuclear Power Station, Western Cape
Environmental Compliance Monitoring - Close Out Report – Close out Report



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1 Introduction

1.1 Project Description & Background

The Applicant, Eskom Holdings SOC Ltd (Eskom), proposes to expand the diesel storage facilities at the Koeberg Nuclear Power Station (KNPS) by installing two self-bunded above ground diesel tanks. The KNPS is located on the Farm Duynfontyn No. 1552, Melkbosstrand.

The two diesel tanks will be placed within the boundaries of Access Control Point 2 (ACP2) which is easily accessible from the power station.



Figure 1: Site Location at the Koeberg Nuclear Power Station (KNPS)

The primary purpose of installing the containerised diesel fuel tanks is to provide a diversified, separate, source of diesel fuel during an extended loss of Alternative Current Power following an external event, to supply:

- the emergency mobile diesel-powered water pumps which will be used to provide reactor core cooling and nuclear spent fuel pool make-up; and
- the Emergency Control Centre (ECC) diesel generator which will allow the ECC to perform its command and control function.

Furthermore, the diesel tanks can be used to supply fuel to the unit Emergency Diesel Generators. It could also be used as an alternative diesel fuel supply for the Station Black Out generators, Main



Admin Building generator, mobile generators and other equipment, dependent on the operating scenario, which is dependent on the equipment available and what is required by the plant.

1.2 Project Authorisation

Eskom undertook the required Environmental Assessment Process, through Dough Jeffery Environmental Consultants (DJEC) to obtain Environmental Authorisation (EA) from the competent authority, the Department of Environmental Affairs (DEA), to proceed with the proposed activity of installing the two proposed diesel Storage Tanks. The Environmental Authorisation comprises the following:

- Environmental Authorisation (DEA Reference: 14/12/16/3/3/1/1736) in term of the National Environmental Management Act (Act 107 of 1998), as amended, and the
- Environmental Management Programme (EMPr) (DJEC Ref: 2015/19).

The EA and EMPr contains conditions and specifications, apart from those in the NEMA, specific to the project during all phases of the project, which must be adhered to.

1.3 Project Execution

Eskom appointed Gridbow Engineers and Technical Services (Gridbow) as the Contractor to construct the reinforced concrete slabs onto which the diesel fuel tanks will be mounted.

1.4 Environmental Compliance Monitoring

Advisian, a WorleyParsons RSA (Pty) Ltd Group, have been appointed as the independent external compliance monitoring agent. As such Advisian is acting as Environmental Compliance Officer (ECO) conducting weekly site inspections during the construction phase of the project in terms of the conditions stipulated in the above-mentioned EA.

2 Monitoring Approach and Methodology

The Environmental Compliance Monitoring is designed to ensure compliance with the environmental management system implemented at the construction site. Sound environmental management at a site depends on the implementation and adherence to prescribed work method statements, guidelines, specifications by the contractor operating on the site. To ensure environmental compliance throughout the course of a project the environmental management aspects must be monitored and enforced on a continuous basis.

Objectives of an Environmental Compliance Monitoring can be summarised as follow:

- Determine and verify whether all environmental requirements, criteria and constraints, as prescribed in the EA and EMPr, are being adhered to.
- Determine and verify whether the implementation of the EMP has been successfully carried out to prevent environmental pollution and damage.
- Determine and verify whether remedial and rehabilitation actions have been implemented successfully to avoid future environmental pollution damage.



During the site visits all the aspects contained in the EA and EMPr are monitored and evaluated for their level of environmental compliance through a rating system. The following criteria are used to determine the level of compliance:

Table 1: Environmental Compliance Rating

RATING	SCORE	MEANING
Full Compliance	2/2	Full adherence with all aspects of the project authorisation and environmental management plan specifications.
Partial Compliance	1/2	Partial adherence with some aspects of the project authorisation and environmental management plan specifications.
Non-Compliance	0/2	Not adhering / disregarding aspects of the project authorisation and environmental management plan specifications.

3 Project Initiation

On the 06th of March 2019 the ECO visited the KNPS to meet the team members from the Client as well as from the Contractor - Gridbow. The Contractor’s project file was discussed, as well as the site and all environmental matters as per the project authorisation and EMPr.



Figure 2: View of project site, facing Southward



4 Project Program Delay

4.1 Project Delay

According to the initial program the project would have been completed by end June 2019. However due to irregularities in the concrete slab surfacing, repair work had to be approved and completed.

Gridbow provided Eskom with a Quality Control Plan for the Reinforced Concrete Slab Repair mid-June 2019 for review and approval.

The affected areas of the two reinforced concrete slabs were scabbled down with a concrete chipper and cleaned with a high-pressure water hose. Formwork was re-assembled to encase the two slabs. A bonding agent was applied to the slabs after which the structural grano screed was added and floated to obtain a 1:200 fall. After curing the formwork was removed and the expansion joints done.

After confirmation that the concrete/screed cube test results were up to standard, the contractor would de-establish the site and commence with site clean-up.

5 Pre-Close Out Site Inspection

5.1 Eskom Site Inspection

Eskom conducted a pre-close out inspection of the site on Thursday, 29 August 2019. The construction work for the reinforced concrete slabs were completed. However, final site clean-up had yet to be completed.





Figure 3: Pre-close out site inspection

6 Close Out Environmental Compliance Monitoring

6.1 Close Out Site Inspection

Upon confirmation from the Contractor that the site had been cleared of all construction debris and equipment, a final site inspection was arranged and conducted on Wednesday ,11 September 2019.





Figure 4: Close out site inspection

6.2 Environmental Close-Out Checklist

The following checklist is as per the approved EMPr for the project.

Table 2: Project Site-File Documentation

Project Documentation	Rating	Comment
DEA EA and EMPr	2	Available in Project File.
Contractor Appointment	2	Available in Project File.
ECO Appointment	2	Available in Project File. Available - Must be included in the Project File.
Organogram	2	Available in Project File.
Environmental Inductions	2	Available in Project File.
Method Statements relating to the project and project related activities.	2	Available in Project File, as well as the Gridbow Emergency Response Plan and Environmental Management System. Note: References to another project is still found in the MS document.
HSE Plan	2	The information is contained in the Gridbow Emergency Response Plan and Environmental Management System. Available in Project File.
Spill Response Induction	2	The spill response induction was given by the ECO as part of the Environmental Induction on



		27 March 2019. Available in Project File.
Fire Fighting Induction	2	Available in Project File.
Complaint Register	2	Available in Project File.
Machine and Equipment Inspection Checklist	2	Available in Project File.
Environmental Incident Register & Reports	2	A Gridbow environmental incident register and reports, must be included in the site file. The incident where the compactor leaked hydraulic oil must be in the register. The incident and how it was addressed must be summarised in an environmental incident report. Note: A Condition Report from Eskom was completed. However, this report does not indicate the date of the incident. Available in Project File.
Temporary site closure checklist	2	Available in the EMPr.

6.3 Contractor De-Mobilisation Activities

Table 3: Contractor Facilities, Equipment & Activities

Facilities and Equipment	Rating	Comment
2.2.2 Site Establishment Planning <ul style="list-style-type: none"> ▪ Site offices ▪ Stores, silos and stockpile areas ▪ Large plant and vehicle parking area ▪ Toilet facilities ▪ Haul routes ▪ Site access ▪ Temporary waste storage area ▪ Large volume fuel storage (tanks or mobile fuel trailers) ▪ All required Method Statements 	2	No site camp establishment was done by the Contractor. Personnel entered the KNPS daily to conduct the project work.
2.3 Site Boundary and Establishment <ul style="list-style-type: none"> ▪ Demarcation of the site boundaries ▪ Demarcation of "No-Go" Areas 	2	The site has been cordoned off with Eskom barricading panel fencing. The fencing is still in place. To be removed by Eskom as and when required.
2.4 Site Facilities <ul style="list-style-type: none"> ▪ Ablution ▪ Water provision ▪ Eating areas ▪ Hazardous material handling and storage ▪ Firefighting equipment ▪ Spill kits & drip trays ▪ Traffic accommodation and 	2	The Contractor personnel are making use of the KNPS facilities with regards to Ablution facilities; Eating areas and Firefighting equipment. Fuel will not be stored on site, but only brought in to site when refuelling must take place. Gridbow obtained their own oil spill kit, which is available on site. All equipment utilised by the contractor has been removed from site.



Transport		
2.5 Site Clearing Vegetation Clearing Topsoil Management	2	Vegetation clearing was initially done. <u>Note:</u> previously disturbed area covered with grass and weeds. The topsoil removed was stored on site and covered with shade netting. <u>Note:</u> Eskom took responsibility for the topsoil stored on site. Calcrete subsoil stockpiled separately on site.
2.6.1 Work Hours	2	Contractor work hours are the same as the KNPS work hours. Site clean-up and de-mobilisation done in accordance with these hours.
2.6.2 Noise Control	2	No unnecessary noise produced on site. Equipment used are in good working order.
2.6.3 Workshop and Equipment Refuelling	2	No established contractor workshop on site. All plant and equipment are serviced and repaired (if needed) off site. Refuelling of plant and equipment was done on the road surface adjacent to the site with the proper equipment when required. No fuel was stored on site.
2.6.4 General Aesthetics	2	No destruction or defacing of Natural features on or around the site. The site was left neat and tidy. The remaining material on site is the property of Eskom and was on the site before the contractor entered the site. These materials were not disturbed.
2.6.5 Material Handling, Use and Storage <ul style="list-style-type: none"> ▪ Stockpiling of material ▪ Concrete Batching 	2	All material brought in to site was stored within the boundaries of the demarcated site. All materials have been removed from site during be-mobilisation. Concrete batching was not done on site. Ready mix trucks was made use of.
2.7 Waste Management <ul style="list-style-type: none"> ▪ Domestic Waste ▪ Construction Waste ▪ Hazardous waste ▪ Waste Water 	2	All waste produced was transferred to the KNPS waste sorting and storage facility before being disposed of by KNPS at the proper disposal facilities, as agreed between the Contractor and the KNPS beforehand.
2.8 Dust Control	2	Only the footprint of the concrete slabs was cleared of vegetation and excavated. The topsoil has been covered. Subsoil stockpiled separately. No dust was produced further from the construction activities on site.



2.9 Soil Erosion and Sediment Control <ul style="list-style-type: none"> ▪ Stormwater control 	2	The site is situated on a level plain. Stormwater control measures were not required.
2.10.1 Protection of Natural Flora	2	The contractor remained within the cordoned off area of the site. No surrounding areas were disturbed.
2.10.2 Protection of Fauna	2	The contractor remained within the cordoned off area of the site. The animals of the surrounding nature reserve were not bothered.
2.11.1 Fire Control / Prevention <ul style="list-style-type: none"> ▪ Smoking ▪ Open fires or flames ▪ Fire extinguishers 	2	<p>Smoking only occurred at designated areas at the KNPS facilities.</p> <p>No fires were made on site.</p> <p>Fire extinguishers were kept at hand on site.</p> <p>The KNPS fire extinguishers were also available at the KNPS facility across from the site.</p>

6.4 Site Clean-Up and Rehabilitation

Table 4: Site Clean-Up & Rehabilitation Activities

Facilities and Equipment	Rating	Comment
2.12.1 Site Clean Up The Contractor shall ensure that all temporary structures, equipment, materials, waste and facilities used for construction activities are decommissioned and removed upon completion of the activity. The Contractor shall clear and clean the construction site to the satisfaction of the ER upon completion of the project.	2	The clean up of the site was done to the satisfaction of the ER and ECO.
2.13 Vegetation Rehabilitation No invasive plant species should be introduced to the site. All invasive alien species should be eradicated from the disturbed sites. Non-indigenous and non-endemic species are permitted.	2	No invasive plant species were introduced to the site. As the cordoned off site was on a previously disturbed area devoid of trees and shrubs, and only the sections where the two slabs were to be constructed was cleared, no vegetation rehabilitation is required.

6.5 Site Close-Out Environmental Monitoring Findings

The following summarises the findings of the close out ECO inspection of the project site:

- The Contractor submitted their completed site file to the Client for their records.



- The Contractor conducted the required work within the operating parameters of the KNPS.
- The contractor remained within the prescribed boundaries of the KNPS facility and of the cordoned-off site.
- No disturbance of fauna or unnecessary removal / destruction of flora occurred.
- All the contractor's material and equipment have been removed from the site.
- No waste or any spillages were left on the site.
- The soil surrounding the concrete slabs were backfilled where required and levelled.
- The covered topsoil and excavated subsoil will remain on site as per the instruction of the Client. This soil will be used for the backfilling and levelling of another previously disturbed site on the KNPS premises.
- The removal of vegetation was only done on the actual footprints of the two concrete slabs. Therefore, no vegetation rehabilitation will be required for this site.

In conclusion, the site was left by the Contractor in an environmentally sound state.

7 Operational Phase Considerations

The Client is reminded to refer to the Environmental Authorisation and Environmental Management Program (EMPr) requirements / specifications with regard to the operation of the fuel tanks which will be mounted onto the two reinforced concrete slabs. Section 3.8 of the EMPr is given below:

3.8. OPERATIONAL MANAGEMENT GOALS

The operational management goals set the procedures for Applicant to achieve its operational environmental policy and goals. This is broken down into the following components, which detail the various goals and objectives set to meet certain targets set. It also describes the various management activities that can achieve these objectives, together with the monitoring and target criteria.

The following have been set as Operational Management Goals to ensure responsible and environmentally sustainable long-term management of the site:

GOAL 1: Maintenance of Infrastructure

To ensure that the diesel tanks and amenities on site are maintained in good order.

GOAL 2: Invasive Alien Vegetation Clearing

To control and reduce invasive alien vegetation on the site.

GOAL 3: Soil and Groundwater Preservation

To prevent any incidents that could lead to soil and groundwater pollution.

GOAL 4: Fire Risk

To prevent fire outbreaks.

*Refer to **Section 4** hereafter, which describes the environmental management and mitigation measures that must be implemented during the operational phase, as well as responsibilities and timelines for the implementation of these measures and monitoring thereof.*