Eskom	Contract Scope of Work	Engineering

Title: **KENDAL P/S SOOTBLOWING SYSTEM INSPECTION AND REPAIR CONTRACT SOW**

Document Identifier:	***1039705**
Alternative Reference Number:	**N/A**
Area of Applicability:	**Kendal Power Station**
Functional Area:	**Engineering**
Revision:	**N/A**
Total Pages:	**13**
Next Review Date:	**N/A**
Disclosure Classification:	**Controlled Disclosure**

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Date: 26/11/2025	**Date:** 26/11/2025	**Date:** 4-12-2025

Content

1. Introduction

The intent of this document is to align Kendal Power Station maintenance and outage scope of work to the Eskom quality management system. Plant shutdowns are inevitable in a coal fired power station; therefore, units must be maintained at pre-determined intervals to ensure that they are sustainable, reliable, and safely operated. This document will outline the sootblower system scope of work to be performed by the contractor during outages and planned and running maintenance opportunities for the duration of 5 years on an "as-and-when" required basis.

The sootblowing system consists of 88 wall blowers,40 SH, RH and Econ lances, 4AH lances and 2 gas probes. Sootblowing is used to achieve optimum cycle efficiency by increasing the overall boiler heat transfer in the boiler. The sootblowing steam is received from the SH div panel and CRH line to charge the system for the wall blowers and the lances, the preheaters make use of aux steam from other units. Steam is controlled by multiple valves, which include HCB11, HCB12, HCB80 and HCB 81. This scop

2. Supporting Clauses

2.1 Scope

This document outlines the planned/running Maintenance and Outage Scope of Work for the Kendal sootblowing system for a duration of 5 years on an "as and when" required basis.

2.1.1 Purpose

The purpose of the scope is to cover all work to be done on the soot blower system during running maintenance and outage. This is to clarify the work activities to the potential contractor who will provide Eskom Kendal Power Station with the maintenance, operating support and outage activities.

2.1.2 Applicability

This document shall apply to Kendal Power Station.

2.1.3 Effective date

This document is effective from the date of Authorization.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001: Quality Management Systems.

[2] ISO 14001: Environmental management Policy Informative

[3] *1023822 Kendal outage Philosophy

[4] GPM0072 Outage Management Procedure.
[5] *1017357 Non-Conformance, Corrective and Preventive Action
[6] *1017482 Control and Approval of Quality Plan
[7] *1019284 Personal Protective Equipment Procedure
[8] *1015807 SANS OHAS 18001:2011 Management System
[9] *1017372 Occupational Health and Safety Hazard Identification
[10] 240-56355225 Welding of High Pressure, Temperature Standard

2.3 Definitions

Definition	Explanation
Contractor	In the context of this document, the "Contractor" will be regarded as the service provider who is authorised by the station to execute the specific work contained in this document
Employer	In the content of this document, the employer will be regarded as the Eskom power plant receiving the service from the contractor

2.4 Abbreviations/definitions

2.4.1. Abbreviations

Abbreviation	Explanation
GO	General overhaul
IR	Interim repairs
ISO	International Standard Organization
SB	Sootblower
WB	Wall blower
SH	Superheater
NDT	Non-Destructive Tests
URS	User Requirements Specifications
OHS	Occupational Health & Safety
QCP	Quality Control Plan
SHEQ	Safety Health Environment & Quality
WPS	Welding Process Specification

2.4.2. Definitions

GO	< 6 weeks	GENERAL OVERHAUL This is a full turbine centreline outage Boiler statutory inspection/tests and refurbishment

		Boiler & turbine auxiliary plant refurbishment
IN	1 - 2 weeks	INSPECTION For inspection purposes only to determine scope of work or obtain history; i.e. fans, boiler, ducting, air heaters and precipitators/FFP
IR	2 - 4 weeks	INTERIM REPAIRS This is done between a GO and MO Scheduled to perform critical repairs to prevent plant failures until the next scheduled outage like boiler tube leak prevention, air heater- and precipitators/FFP repairs/washing
MO	4 - 6 weeks	MINI OVERHAUL This is a partial turbine centreline outage Scheduled at intervals between GO's to perform outage related refurbishment work that: Prevents the unit to run from GO to GO, typically boiler, air heater, burner and ducting work etc. GO activities that can fit in during the outage without extending the duration to relieve resource risks and congestion during GO's, typically turbine steam admission valve refurbishment and generator inspections
ST	As required	SHORT TERM PLANNED REPAIRS Any planned work required outside of the normal outage philosophy Planned and requested 28 days in advance Readiness indicator and ORC Risk Report to be submitted with the request

2.5 Roles and Responsibilities

This document shall apply to all Kendal Power Station outages and running and shutdown maintenance opportunities being declared by the Kendal Management Team. Every department plays a pivotal role in making sure that outages and running and shutdown maintenance opportunities are successful, and units are returned to service on time, and efficiently. Refer to the Kendal Power Station business Organisation Roles and Responsibilities*1017523. Below are the roles and responsibilities of each department:

2.5.1 Maintenance and Outages Department

- Develop optimized maintenance and Outage networks,
- Management of contract services provided during Outages and maintenance shut-down opportunity,
- Ensure quality control of activities during Outages and maintenance shut-down opportunity,
- Management of time cost and quality on Outages and maintenance shut-down opportunity,
- Develop Kendal specific outage readiness indicator as per generation for Outages and maintenance shut-down opportunity planning principles,
- Submit financial plan spreadsheet,

2.5.2 Engineering Department

- Is responsible for the determination and compilation of the maintenance shut-down opportunity SOW
- Participate in the maintenance shut-down opportunity execution review.
- Formulate the contents of the maintenance shut-down opportunity execution
- Ensuring plant and documents are technically compatible
- Proposing and implementation of modifications
- Assist with the review of quality control plans

2.5.3 Technical Support Department

- The supervision of maintenance shut-down opportunity activities to ensure quality and productivity targets are achieved
- The control of spares and consumables
- The development of work instructions and procedures
- The developments of bill of materials
- Technical review of work instructions at pre-determined intervals
- Provision of quality work history
- The notification of all failures not attributed to normal wear and tear and/or frequent/repeated failures of components.
- To assist in the investigation of incidents and the root cause analysis
- Monitor spares stock holding

2.5.4 Inventory Management Department

- Maintaining the approved stock levels
- Storage of stock according to approved methods
- Forward planning to ensure stock availability
- Ensure reviewing of stock levels
- Stock accuracy and control
- Stock Optimisation
- Issuing of materials to end users
- Receiving of goods

2.5.5 Safety and Environment Department

- Implementation of SHE systems
- Ensure compliance with OHS Act and putting in place of enforcement mechanism
- Regular internal communication at all levels by way of meetings and discussions concerning health and safety
- Identify hazards in different areas and conduct task risk assessments regarding employees acts
- Coordinate and identify SHE training gaps
- Development and implementation of safety policies and procedures
- Report incidents

2.5.6 Quality and Assurance Department

- Ensure quality control processes are in place.
- Ensure adherence to Eskom operating procedures, policies, guidelines and plant safety regulations
- Review and accept quality plans

2.5.7 Contractor

The responsibilities of the contractor are as per NEC and compliance to the relevant standards.

2.6 Process for Monitoring

Kendal Documentation Centre

2.7 Related/Supporting Documents

N/A

3. Document Content

3.1 Records and History Requirements

- Outages and maintenance shut-down opportunity Inspection reports
- 04 defects
- Recommendations from incident investigations
- Engineering change requests
- RBO

3.2 Quality control Plan

A quality control package that includes final scope of work, quality control plan, safety files, work execution procedures etc. from the contractor will be sent to technical support and engineering from the outage controller for approvals. Refer to Kendal Quality Management Manual *1017374.

3.3 Competence

Refer to Kendal Quality Management Manual *1017374. Section 6.2.2

3.4 Equipment requirements

Refer to Kendal Quality Management Manual *1017374. Section 7.6

3.5 Safety

Refer to the SHEQ Policy statement 32-727 and the OHAS 18001

Eskom Safety and Health standards, specifications, directives and practices shall apply. The following legislations are applicable:

The contractor shall comply with the health and safety legislation, and Eskom SHE standards/ directives which shall include minimum:

- Occupational Health and Safety Act (No 85 of 1993) – included is the Construction Regulations
- Kendal Safety Risk Management Procedure Manual for Contractors *1015696
- Eskom Construction safety health and environmental procedure 32-136
- Compensation for Occupational Injuries & Diseases Act
- Eskom SHEQ Policy 32-727
- Eskom Life Saving Rules procedure 240- 62196227
- Eskom Incident Management procedure 32-95
- Vehicle and Driver Safety Management procedure 32-93

- Work at Heights procedure 32-418
- Eskom Vehicle Safety Specifications 32-345

3.6 Environment

Refer to the SHEQ Policy statement 32-727 and ISO 14001

3.7 Risk management

Risk assessment shall comply with the following documents:

- Kendal Quality Management Manual *1017374
- Kendal Integrated Risk Management Procedure *1017401

3.8 Product Preservation Requirement

Refer to the Kendal Quality Management Manual *1017374, section 7.4.4 and 7.5.5

4. Acceptance

This document has been seen and accepted by:

Name	Designation
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5. Revisions

Date	Rev.	Compiler	Remarks
November 2025	0.1	R. Makhokha	Inclusion of Detailed Maintenance SOW
June 2025	00	R Makhokha	New Document

6. Development Team

The following people were involved in the development of this document:

- Rendani Makhokha

7. Acknowledgements

- N/A

Appendix A – SCOPE OF WORK

A.1 SOOTBLOWING DETAILED SCOPE

8. The Contractor's Scope

8.1 General Requirements for the *Works*

1) Maintenance and upkeep of the sootblower system at Kendal Power Station U1 – U6 for a period of 5 years.

8.2 Description of the works

1) The supply of labour, tools, equipment, consumables, supervision, management, logistics, and support services for the sootblowing system at Kendal Power Station from Unit 1 – 6 for a period of 5 years.

8.3 Detailed SOW

The below SOW identifies activities to be done during running and shutdown maintenance opportunities and outages.

8.3.1 Outage Detailed SOW

- All Poppet valves, lance gearboxes, and wall blowers are to be removed from the boiler within **4 days** from access to the plant and delivered to the contractor's workshop and to be ready for inspection within **7 days** from access to the plant.
- A walk down of the plant to be done with an Eskom representative one month and one week prior to an Outage to identify defects, the defects are the Employer cost, when equipment is brought back and fitted any defect found other than the defects identified before the Outage the cost is for the Contractor.
- SOW As per table below.
- Contractor must report to the EMD and C&I Outage controller when mechanical work is complete.
- Assist with re-commissioning at the end of the Outage.as per re commissioning procedure 1016517 or HCB-PO-001.

SOOT BLOWER PLANT		
Item	**Component**	**Description of work**
	POPPET & AIR RELIEF VALVES	
All poppet & air relief valves	Wall blower, lance blower	Inspect all poppet and air relief valves and draft availability and defect report.
		Remove air gauge and copper piping

	and air heater blowers	Remove all poppet valves from the boiler, temporarily blank the pipe and transport to the contractor's workshop
		Dismantle poppet valves
		Inspect all the spares and replace if necessary
		Sand blast body and check for cracks using dye penetrant (PT)
		Pressure test and MPI test poppet valve
		Reassemble poppet valves
		Replace air gauge and copper piping
		Re-install poppet valve into the boiler
		Re-install poppet valve
WALL BLOWERS - IR 2F		
All wall blowers		Inspect all wall blowers and draft availability and defect report.
		Remove from boiler.
		Dismantle all lance blowers gearbox.
Gear reducer assembly		Check for wear and replace if necessary. Reassemble using new oil seals.
Feed tube		Check alignment, do thickness test, check nozzle sizes, scoring and erosion. Repair or replace if necessary.
Screw tube		Check straightness and thickness. Repair or replace if necessary.
Nozzle		Check for cracking. Repair or Replace if necessary.
Gear and bearing assembly		Check for wear. Repair or replace if necessary.
Drive pins		Check for wear. Replace if necessary.
Guide flange and valve operating cam		Check for wear. Repair or Replace if necessary.
Guide bar assembly		Ensure that the pawls are operating freely. Repair or Replace if necessary.
Lubrication		Lubricate where required.
All wall blowers		Re-assemble gearbox blower.
All wall blowers		Re-fit blower gearbox to the boiler.
LANCE BLOWERS – IK 545B		
All lance blowers		Inspect all lance blowers and draft availability and defect report.
		Remove from boiler.
		Dismantle all wall blowers.
Gear reducer assembly		Disassemble, check for wear and replace if necessary. Reassemble using new oil seals.
Feed tube		Check alignment, do thickness test, check nozzle sizes, scoring and erosion. Repair or Replace if necessary.

Nozzle		Check for cracking. Repair or Replace if necessary.
Gear and bearing assembly		Check for wear. Repair or Replace if necessary.
Air relief valve		Pressure test. Repair or Replace if necessary.
Lubrication		Lubricate the gear reducer
All lance blowers		Re-assemble blower.
All lance blowers		Re-fit blower to the boiler.
AIR HEATER SOOT BLOWER LANCES - IK 510		
Lance tubes	HCB91AN201	Check for corrosion, do thickness test, surface damage and straightness. Repair or Replace if necessary.
Feed tubes	HCB91AN201	Check for corrosion, do thickness test, check nozzle sizes, surface damage and straightness. Repair or Replace if necessary.
Nozzles	HCB91AN201	Check for cracking and corrosion. Repair or Replace if necessary.
Lance blower	HCB91AN201	Re-assemble blower.
Lance blower	HCB91AN201	Re-fit blower to the boiler.
Lance tubes	HCB92AN202	Check for corrosion, do thickness test, surface damage and straightness. Repair or Replace if necessary.
Feed tubes	HCB92AN202	Check for corrosion, do thickness test, check nozzle sizes, surface damage and straightness. Repair or Replace if necessary.
Nozzles	HCB92AN202	Check for cracking and corrosion. Repair or Replace if necessary.
Lance blower	HCB92AN202	Re-assemble blower.
Lance blower	HCB92AN202	Re-fit blower to the boiler.
Lance tubes	HCB91AN203	Check for corrosion, do thickness test, surface damage and straightness. Repair or Replace if necessary.
Feed tubes	HCB91AN203	Check for corrosion, do thickness test, check nozzle sizes, surface damage and straightness. Repair or Replace if necessary.
Nozzles	HCB91AN203	Check for cracking and corrosion. Repair or Replace if necessary.
Lance blower	HCB91AN203	Re-assemble blower.
Lance blower	HCB91AN203	Re-fit blower to the boiler.
Lance tubes	HCB92AN204	Check for corrosion, do thickness test, surface damage and straightness. Repair or Replace if necessary.
Feed tubes	HCB92AN204	Check for corrosion, do thickness test, check nozzle sizes, surface damage and straightness. Repair or Replace if necessary.
Nozzles	HCB92AN204	Check for cracking and corrosion. Repair or Replace if necessary.
Lance blower	HCB92AN204	Re-assemble blower.
Lance blower	HCB92AN204	Re-fit blower to the boiler.

Drain valves orifice	HCB*BP*	Inspect all soot blowers drain valves orifice. Ensure that the piping is clean. Replace if severe steam cutting is evident.
All Lance Gearbox		Remove from plant and send to workshop. Disassemble the gearbox, clean the components and inspect for damage. Repair or replace if necessary.
LANCE BLOWER CARRIAGE (IK 540 & IK 545B)		
Cam and arm assembly		Inspect all cam and arm carriage and draft availability and defect report. Disassemble the assembly, clean components, inspect components and replace damaged ones, and re-assemble all components.
Roller brackets assemble		Disassemble the roller bracket assembly, check rotating freely, clean and replace damaged components.
Roller brackets assemble		Replace all ball bearings, inspect the shafts and replace if damaged. Re-assemble the components and test if all are working properly.
Roller bracket assembly		Adjust the angle of rollers
GAS PROBE ASSEMBLY		
Gearbox reducer		Disassemble the gearbox, clean the components and inspect for damage. Repair or replace if necessary
Pulleys		Inspect pulleys for any damage
Roller bracket assembly		Disassemble, inspect, clean, replace damaged, and re-assemble the roller assembly.
RECOMMISSIONING		
Lubrication		Lubricate where required as per the Maintenance strategy
Testing		Recommission soot blower system using recommissioning procedure *1016513.

8.3.2 Maintenance Detailed SOW

[1] The Contractor must have a permanent site crew during normal working hours comprising of:

- X1 Site Manager.
- X1 Site Supervisor.
- X1 SHEQ Officer.
- X6 Mechanical Fitters (1 per unit).
- X6 Semi-Skilled (1 per unit).

- X3 Electricians (1 per 2 units).
- X1 Rigger.
- X1 Rigger Assistant
- X1 Boiler maker. On an as and when required basis

[2] The Contractor will have the artisans authorised to take out permits under Low Voltage Regulations within (3) months from the Contract start date to the end of the Contract.

[3] The Contractor will be required to perform stand by duties whereby one authorised artisan and one semi-skilled must be on standby at all times during after-hours including weekends and holidays, this will be for the duration of the contract.

[4] The Contractors required working hours are from 07:15 to 16:30 Monday to Thursday and from 07:15 to 12:15 on Friday for every normal working week.

[5] The contractor shall be required to support operating in conducting daily sootblowing activities (including weekends), as per the operating work instruction, Soot-blowing: boiler soot blower schedule work instruction *1016516

[6] The contractor shall Perform pre and post sootblowing walk-down and fill check sheets and all required documents for record keeping of the system.

[7] The Contractor is to perform 1 weekly inspections on all Units 1-6, if only partial inspection is done the outstanding inspections must be complete within 3 days if for some reason it cannot be done the Contractor is to report this to the Mechanical system engineer within 24 hours. Weekly system status report must be written and sent to the mechanical maintenance supervisor, the tech support personnel and the system Engineer.

[8] The Contractor must do all related Preventative Maintenance schedules, write a report indicating the status and the blowing pressures of each blower and submit the defects to the Employer representative for immediate notification creation.

[9] The Contractor must address and complete all submitted Work Orders on a daily basis as prioritised by the Employer representative

[10] All generated Work Orders from the employers Preventative Maintenance Scheduled inspections as well as work orders loaded by the employers' employees during plant walk downs must be carried out within three (3) working days by the Contractor. The (3) three working days will be effective from the loaded date of the Work Order.

[11] If defects are noted, they must be reported to the Works management, and the defect number to be recorded and tracked by the Contractor, the tracking method will be discussed on start of Contract by the employer's representative

[12] The Contractor is responsible to follow the employers SMP's for each activity

[13] The Contractor shall provide transport from home to work for all the contractors' employees. No employees shall be transported on the back of LDVs not even if the LDVs have canopies

[14] All material spares etc. at the point of termination or expiry of the Contract on site are to be handed over to the Employers Representative. The Contractor will not be allowed to remove anything but personal property from site.

[15] For every stuck blower, investigation must be done with the maintenance tech support personnel, system Engineer and the report must be developed by the contractor.

[16] The site manager to attend all the meetings deemed necessary by the contract manager.

[17] The Authorised Supervisor must attend the soot blower task team meeting and the Boiler Tube Leak Forum and present the status of the soot blowers.

[18] Familiarize yourself with the soot blower system maintenance strategy (Procedure *1024717). And perform dry running soot blower system during re-commissioning after Outage as per procedure 1016517 or HCB-PO-001