Eskom	Scope of Work	Camden Power Station

Title: **Clinker Removal and Rope Access Contract SOW 2025**

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Content

1. Introduction

The removal of clinkers or loose ash from a boiler is one of the most critical and hazardous activities within Generation Business Units. Given the high-risk nature of this task, it is imperative that it is performed with utmost vigilance and attention to detail, strictly adhering to safety protocols. Failure to do so can result in severe injuries, potential fatalities, significant damage to plant equipment, and extensive unit downtime. This document defines the specific safety requirements for clinker and loose ash removal, as well as any rope access activities within Camden Power Station during outages and maintenance, to ensure a safe working environment for all personnel involved.

1.1 Scope

This SOW applies to all rope-access and clinker/loose ash removal activities within the boiler envelope and associated systems (burner belt, water walls, superheaters, furnace throat, bottom ash/boiler ash hoppers), plus station rope-access tasks (economiser hoppers, bunkers, coal transfer houses, staiths, incline conveyors, girders). Departments covered: Operations, Boiler Engineering, Boiler Maintenance, Outage, Risk & Assurance, and approved maintenance contractors

1.1.1 Purpose

Provide clear, safe, and auditable requirements for the removal of clinkers/loose ash and the execution of rope-access activities in Units 1–8, including off-load methods, in order to protect people, plant, and production

1.1.2 Applicability

Boiler Engineering, Boiler Maintenance, Energy, Outage, Operating, Common Plant

1.1.3 Effective date

September 2025

1.2 Normative/Informative References

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

1.2.1 Normative

[1] 36-681 Plant safety regulation

[2] 36-1346 Heat Stress Management Procedure

[3] 240-56065036 Heat Stress Management Work Instruction

[4] 240-62196227 Life Saving Rules

[5] 32-391 Integrated Risk Management Standard

[6] 004 -10612 Boiler Clinker Removal

[7] 240-154119722: WCOU Power Plant Maintenance Fall Protection Plan

[8] 32-418: Work at Height Standard

[9] WFH002: Safe use of work from height system

[10] 34-1507: Specification for fall arrest systems

[11] 07TB-011: Safe use of Work from Heights Systems

[12] 34-1710: Provision and Use of Personal Protective Equipment

[13] 34-323: Personal Protective Equipment Specification

[14] SANS 51808: Safety Requirements on suspended access equipment

[15] SANS 10295-2 Temporary Suspended Platforms

[16] SANS 16368 Mobile Elevating Work Platforms

[17] SANS 18893 Mobile Elevating Work Platforms

[18] SANS 1397: Industrial Safety Helmet.

1.2.2 Informative

[19] FFFR-Fossil Fuel Firing Regulations.

[20] ISO 9001 Quality Management System

OHSA-Occupational Health and Safety Act (Act No 85 of 1993

2. Insert informative document references here.

2.1 Definitions

Appointed Team Leader-Means a competent and experienced person in clinker removal with a specific role (not a specific position) that gets assigned to monitor and control the clinker/loose ash removal during the on-load or off-load clinkers/loose ash removal process. All maintenance activities related to clinker removal will be undertaken under the direct supervision of the Appointed Team Leader

Appointed Recovery Manager- A person who understands the risks associated with clinkers and he/she gets assigned to coordinate the recovery plan, supervise resources and to assist the Appointed Team Leader with his tasks on clinker removal. For station which do not have the skills, other sites to be contacted to provide such skills and appropriate advice.

Bird-nesting clinkers- Clinkers that manifest itself in the superheater tubes just above the furnace exit will be part of the normal clearance of the boiler to be able to issue a safe entry certificate before maintenance activities can be allowed

Boiler forced cooling- The period after shutdown where the boilers are cooled down using the draught groups.

Clinkers build-ups- A built-up of clinkers anywhere in the boiler.

Dirty boiler inspection- A visual inspection of the internal of the boiler to establish if any clinkers are present and if so, the position thereof.

Eyebrow clinkers- Clinkers that manifest it-self on the water wall tubes around the burners will be part of the normal clearance of the boiler to be able to issue a safe entry certificate before maintenance activities can be allowed to continue.

Risk Assessment Team- Team that includes the Appointed Recovery Manager, Responsible Person in terms of the Plant Safety Regulations, Operating representative, Production Manager, GMR2, the appointed Team Leader and Boiler Pressure Part System Engineer as a minimum to access the risk of clinker removal activity.

Task Specific risk assessment- A risk assessment done before starting and during the performance of a specific activity that can have a harmful impact on people or plant. Task specific risk assessments must be part of and incorporated into a pre-job brief.

Off-load clinker removal- Removal of clinkers and ash build ups around the burners, on water walls, superheaters, across the throat of the boiler and in the ashing system while the unit is off load.

On-load clinker removal- Removal of clinkers and ash build-ups while the unit is on load excluding quenched ash or clinkers below the normal water level of the ashing system. On-load clinker or ash build-up removal may require a load reduction

2.2 Abbreviations

Abbreviation	Explanation
AP	Appointed Person
ERT	Emergency Response Team
GMR2	Person appointed as per General Machinery Regulation 2.1
PPE	Personal Protective Equipment
PSR	Plant Safety Regulation
PTW	Permit to Work
RP	Responsible Person (PSR)
PSGM	Power Station General Manager
NDT	Non-Destructive Testing
VI	Visual Inspections

2.3 Roles and Responsibilities

Operating- Unit controller to report abnormality in relation to boiler ash removal system or possible clinker formation. Ensure the correct standard isolations for the work to be executed, risk assessment signed by the Power Station Manager, environmental certificate has been completed prior to issuing of the Permit to work.

Power Station General Manager- On confirmation of the massive clinker formation, existence on the boiler, the PSGM will decide to shut down the unit for the removal of the clinkers. On shut down of the unit, the PSGM will appoint the following

- A recovery manager
- Competent Team Leaders (One per Shift)
- A competent person to do a full internal boiler inspection

-The PSGM to sign the risk assessment prior to the issuing of the PTW. Risk assessment to be updated every 24 hrs based on the report received from the Appointed Recovery Manager

Appointed Recovery Manager- To be a direct reporting line to the PSGM and be an overall accountable during the clinker removal period. Responsible to conduct Post-mortem debrief and to document all findings. Any blasting activities shall be conducted under direct supervision of the appointed recovery manager.

Engineering Manager-Responsible for ensuring the plant is operated safely without any risks that may compromise plant reliability and safety of personnel.

Maintenance Manager- Ensure all maintenance crew is familiar with clinker removal procedure and to ensure that competent staff is available to safely remove clinkers

Risk and Assurance- Responsible for the continuous job observation of work, risk assessment tool.
System Engineer- Compile and review document
Partners and contractors- They will execute the work according to relevant procedures and quality standards

2.4 Process for Monitoring

N/A

2.5 Related/Supporting Documents

[1] Clinker Removal and Rope Access

3. SOW

The scope of work includes the supply of labour for the hiring, operation, and Installation (Assemble and disassemble) of suspended platforms, installation of rope access activities i.e., qualified abseiling personnel during Outages and on running plant, for the following activities as listed below at Camden Unit 1-8 Boiler, Energy, Common plant, and OPS Support:

- Boiler Beam Structures
- Boiler roofs and external
- Buck stays
- Ducting
- Tanks
- Vessels
- Mills

- Cable Racks
- Side walls
- burner belt
- Water walls
- Superheaters
- Furnace throat
- Bottom ash/boiler ash hoppers
- Economiser hoppers
- Bunkers
- Coal transfer houses
- Staiths
- Incline conveyors
- Gliders
- Gutters
- IBR Sheets

3.1 Off - Load Clinker Removal and Rope Access utilisation

For the off-load clinker removal, The PSGM must appoint the relevant Senior Person as the Appointed Recovery Manager for the duration of the clinker removal activity.

No.	Scope of work	Responsible work centre	Procedure or Specification	Hold or Witness Points	Check sheet
1.	Meeting to discuss the off-load clinker removal to consist of the following personnel • Appointed Team Leader • Boiler Pressure Parts • Shift Manager • GMR2 • Responsible Person				
	• Appointed Person • Competent risk assessor • Emergency Response Team Leader				
2.	Setting up the worksite must be closely controlled and monitored by the Appointed Recovery Manager				

3.	The area around the specific boiler to be barricaded with solid barricading from permit enforcement to permit revocation. Barricading to have ”No Entry” sign				
4.	Equipment for removal of the clinker/loose ash to be positioned at the boiler area, auxiliary plant, and turbine plant.				
5.	Unit Shut down as per procedure	OPS			

6	Boiler to be forced cooled as per procedure				
7	Boiler inspection doors to be opened				
8	Work environment to be declared safe and Environmental Certificate and Gas Test Certificate to be issued				

9	Thermograph equipment/infrared cameras can be used to assist in determining radiant heat emitted by the clinker				
10	PTW to be obtained				
11	Lifeline to be installed. It must be a metal cable (Blondine wire) strung through two access points on opposite wall openings as a hookup point for all workers performing work inside the boiler				
12	During the activity of clinker removal,				

	oxygen levels and heat stress monitor to be tested on hourly basis				
13	To remove the clinkers around the heat exchanger areas, sky riders, scaffolding and rope access is required				
14	To remove the clinkers around the burner area, sky riders/rope access are required.				

15	To remove the clinkers around the throat area, all ash hopper doors, boiler inspection holes to be opened				
16	All clinker/debris to be to be washed and be removed from the boiler tubes, ash hoppers and ash removal system				
17	Boiler Inspection to be conducted to ensure clinker has been successfully				

	removed from boiler walls, and throat.				
18	Pressure Parts Engineer to inspect boiler tubes for consequential damages				
19	Burners Engineer to conduct inspection on the burners area, if there is access, if not the sky-riders/rope access to be used for inspections				

20	Scaffolding to be removed and PTW to be cleared				
21	Within the 7 days after clinker removal has been successfully removed, the station to perform postmortem				
22	Bridge removal				
23	Boiler 1-8 from 58ml to 0ml (Ash hopper) on boiler internals.				
24	Rope access will be employed on the following areas as				

	and when required as per requirement: • Boiler Beam Structures • Coal bunkers, stathes, and transfer house • Boiler roofs and external structure • Pipe work • Buck stays • Ducting • Tanks • Vessels • Mills • Cable Racks • Side walls				

	Rope Access ➢ Cleaning unit 1-8 from 58ml to 0ml and the frequency which is once yearly (Equipment needed for cleaning will be as follows but not limited to: feather dusters & brooms)				
25	Incline conveyor structures				

26	Glider's cleaning				
27	Removal and replacement of IBR sheets				
28	Rope access to Evaporator walls for wall thickness test				
29	Removal & replacement of platform and				
	handrails inside FFP hoppers				
30	Removal & replacement of metal roof sheets and steel structures				
31	6 Monthly - Roofing and structural inspections with inspection/ assessment report				
32	Removal of foreign material in areas where abseiling activities will be required.				

33	Gutter cleaning				

4. Acceptance

This document has been seen and accepted by:

Full Name and Surname	Designation
Sipho Ndhlovu	Snr Supervisor Boiler Maintenance
Dorah Phakathi	Snr Technician Operating
Phello Sejake	Snr Advisor Boiler Engineer
Tshilidzi Khwashaba	Outage Coordinator
Davy Mthimunye	Snr Technician Maintenance

5. Revisions

Date	Rev.	Compiler	Remarks
August 2025	00	Michelle Nchabeleng	Draft
September 2025	01	Michelle Nchabeleng	Final Issue
April 2026	02	Michelle Nchabeleng	Updated the template

6. Development Team

Michelle Nchabeleng

7. Acknowledgements

N/A