

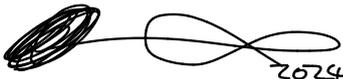
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|  | <p align="center">Scope of Work</p> | <p align="center">Generation Engineering</p> |
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APPROVED FOR AUTHORISATION

GENERATION ENGINEERING

DOCUMENT CENTRE ☎ X4962

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CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

1. INTRODUCTION

This document provides a technical scope of work for the Supply, Transportation, Erection and Dismantling of Scaffolding and Insulation material for Fossil Fired Power Stations.

This document does not cover the tender technical evaluation criteria.

2. SUPPORTING CLAUSES

2.1 SCOPE

This document covers the technical scope of work for the Supply, Transportation, Erection and Dismantling of Scaffolding and Insulation Material for Fossil Fired Power Stations. It provides the requirements for base crew and other resources.

2.1.1 Purpose

The purpose of this document is to provide a technical scope of work for the Supply, Transportation, Erection, and Dismantling of Scaffolding and Insulation Material for Fossil Fired Power Stations.

2.1.2 Applicability

This document shall apply to the Generation fossil fired Power Stations, including commercial units on the new build power stations.

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] Occupational Health and Safety Act 85 of 1993 (OHS-Act)
- [2] Construction Regulation (2014)
- [3] ISO 9001: Quality Management Systems.
- [4] SANS 1445-All Parts: Thermal insulation materials for industrial applications
- [5] SANS 10085-1: The design, erection, use and inspection of access scaffolding.
- [6] 240-105658000: Supplier Quality Management Specification
- [7] 240-168966153: Tender Technical Evaluation Procedure
- [8] 474-13397: Technical Evaluation Strategy for the Supply, Transportation, Erection and Dismantling of Scaffolding and Insulation Material for Fossil Fired Power Stations.
- [9] 474-13297: Technical Specification for the Maintenance and Outage Repair Services for Boiler Pressure Parts and High-Pressure Pipework of Fossil Fired Power Stations.
- [10] 240-56239129: High Energy Pipework Standard for Eskom Power Plants
- [11] 240-56247004: Thermal Insulation Standard

2.2.2 Informative

- [12] 240-58513670: Corrective and Preventative Action Management Work Instruction

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2.3 DEFINITIONS

| Definition | Description |
|-------------------------|--|
| Forced Outage | An unforeseen event that disrupts the state of a component, disrupts the provision of services and creates unforeseen changes to the outage planning process. |
| Maintenance | Repair and replacement of components to ensure the reliable operation of the plant and conformance to statutory requirements. |
| Outage | An Outage is a state of a component that is unable to perform its required function. An outage can be either planned or forced. |
| Planned Outage | Planned outages shall include all maintenance repair projects with sufficient lead time to allow them to be accomplished on a non-emergency basis and all capital and renovation projects which require outages during construction. |
| Contractor | Service provider contracted for supplying specific service to Eskom Holdings business unit. |
| Employer | Eskom Holdings business unit. |
| Employer Representative | Any person appointed in writing by Employer as the delegated Employer representative. |

2.3.1 Disclosure Classification

Confidential: the classification given to information that may be used by malicious/opposing/hostile elements to **harm** the objectives and functions of Eskom Holdings Limited.

2.4 ABBREVIATIONS

| Abbreviation | Description |
|--------------|-------------------------|
| NCR | Non-Conformance Record |
| SOW | Scope of Work |
| PSR | Plant Safety Regulation |

2.5 ROLES AND RESPONSIBILITIES

As per 240-168966153: Generation Tender Technical Evaluation Procedure and 474-13397 Technical Evaluation Strategy for the Supply, Transportation, Erection and Dismantling of Scaffolding and Insulation Material for Fossil Fired Power Stations.

The Technical Evaluation Team (TET) members shall ensure compliance with this document during tender evaluations.

2.6 PROCESS FOR MONITORING

Technical tender evaluation audits/independent reviews (as and when needed) by duly appointed personnel to ensure that tender evaluations are conducted in compliance to the technical requirements specified.

2.7 RELATED/SUPPORTING DOCUMENTS

Refer to paragraph 2.2 above.

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3. SCOPE OF WORK

3.1 SCOPE INCLUSIONS

The scope of the service will include site office management, supervision, quality inspection, coordination and related administration work, supply of maintenance crew, outage and project teams, supply of the related materials and consumables, warehousing and storage of the related scaffolding and thermal insulation, supply of transportation and hoisting for materials (including asbestos) and staff.

The scope of this service is applicable to all routine maintenance work outage (planned and forced) and technical plan projects.

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The scope of service will be performed in the following areas of plant or systems requiring scaffolding erection and dismantling as well as insulation removal and replacement. Areas of plant include (but are not limited to):

3.1.1 Boiler house external (any components not listed in section 3.2)

3.1.2 Vessels, headers, heaters and associated equipment

3.1.3 Turbines, Generators and auxiliary plant

3.1.4 Coal, lime and ash handling plants including transfer houses

3.1.5 Pipework, Valves and fittings

3.1.6 Heaters, tanks, vessels and pumps

3.1.7 Ducting, air heaters and fans

3.1.8 Milling plant

3.1.9 Submerged scraper conveyor

3.1.10 Fabric filter plant

3.1.11 Precipitators plant

3.1.12 SO₃ Plant

3.1.13 Draught group (fans and air heaters)

3.1.14 Flue gas desulphurization plant

3.1.15 Dust handling plant

3.1.16 Ash and coal silos

3.1.17 Ash and coal bunkers

3.1.18 Fuel oil plant

3.1.19 Auxiliary boilers

3.1.20 Water treatment plant and its auxiliaries

3.1.21 Waste treatment plant

3.1.22 Hydrogen plant

3.1.23 Nitrogen plant

3.1.24 Liquid propane plant

3.1.25 Air cooled condensers

3.1.26 Cooling towers

3.1.27 Condensate polishing plant

3.1.28 Condensate extraction pump house

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3.1.29 Auxiliary cooling water plant

3.1.30 Transformers

3.1.31 Control and instrumentation cabling trunk

3.1.32 Electrical cabling trunk

3.1.33 Switchgear rooms

3.1.34 Battery rooms

3.1.35 Equipment rooms

3.1.36 Buildings, offices and structures

3.1.37 Crane and lift structures

3.1.38 Sewerage plant

3.1.39 Compressor plants

3.2 SCOPE EXCLUSIONS

The plant areas or systems described below are excluded from the scope (refer to 474-13297 Technical Specification for the Maintenance and Outage Repair Services for Boiler Pressure Parts and High Pressure Pipework of Fossil Fired Power Stations) for more details of excluded scope.

3.2.1 Economiser inlet header to the final superheater outlet header.

3.2.2 Reheater inlet header and final reheater outlet header.

3.2.3 All boiler internal small-bore pressure parts piping, headers, and stub-boxes.

3.2.4 All boilers drain lines, blowdown systems piping, spraywater system piping.

3.2.5 Boiler start-up system piping and vent lines, including all associated valves.

3.2.6 Boiler enclosure walls.

3.2.7 Boiler structures as described in Boiler Structure Inspections Manual 240-77801161 including platforms, beams, supports and boiler hangers.

3.2.8 Sootblower system.

3.2.9 Boiler pressure parts valves.

3.2.10 Boiler burners.

3.2.11 Boiler manholes.

3.2.12 Boiler ash hoppers.

3.2.13 Boiler auxiliary steam range.

3.2.14 Boiler drum.

3.2.15 Auxiliary boilers.

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3.2.16 Complete Main Steam piping system from final Superheater (SH) outlet header to Emergency Stop Valve (ESV) including bypass piping systems, bypass valves, safety valves, drain systems, attemperator systems, support systems.

3.2.17 Complete Hot Reheat piping system from final Reheater (RH) outlet header up to ESV inlet including bypass piping systems, bypass valves, safety valves, drain systems, support systems.

3.2.18 Complete Cold Reheat piping system from turbine casing connection up to inlet reheat header including bypass piping systems, bypass valves, safety valves, drain systems, support systems.

3.2.19 Complete Feedwater piping system from HP feed water pump outlet up to economiser inlet header including HP Heater bypass piping systems, bypass valves, safety valves, drain systems, support systems.

3.2.20 Turbine Loop pipes and steam penetrating pipes.

3.3 NON-EXCLUSIVE SCOPE

Non-exclusive scope is defined as scope that, forms part of this contract scope but the selection of this scope will be determined on a site-by-site basis i.e. included in the station addendum.

Contract rates will apply where applicable to determine the scope cost as and when required. Non-exclusive scope is as follows:

3.3.1 Lifeline installation

3.3.2 Asbestos disposal

3.3.3 Aluminum sheet replacement on the turbine plant

3.3.4 Ceramic wool replacement

3.4 SITE ADDENDUM REQUIREMENTS

The site addendum document may be prepared for each specific site and shall strictly be confined to the recording of site operational requirements as shown in Appendix A.

The addendum shall not be used to introduce new scope and the additional priced items.

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4. SCAFFOLD AND INSULATION REQUIREMENTS

4.1 Design, supply, erecting and dismantling of scaffolding.

- 4.1.1** The erection and dismantling of scaffolding in a Power Station environment is a high risk activity. The Contractor adheres strictly to the Employer's safety regulations and precautions.
- 4.1.2** The Contractor is responsible for the design of all specialised scaffolds.
- 4.1.3** A red board indicating "unsafe" scaffold will be attached to any new built scaffold until the necessary inspection is done by an authorised scaffold inspector and then a "green safe" board must be attached.
- 4.1.4** No scaffold is used before the necessary safety inspection is done and the scaffold certified safe for use (sign indicating "scaffold safe or unsafe").
- 4.1.5** The Contractor is responsible to inspect all scaffolds for safety and keeps a record thereof noted on a weekly check sheet.
- 4.1.6** The Contractor must ensure that all scaffold materials are clearly marked for easy identification.

4.2 Removal and installation of thermal insulation and cladding

- 4.2.1** The Contractor is not permitted to weld onto any Plant including high pressure vessels, headers and pipe work. No welding on Plant will be permitted prior to the necessary approval given formally by the Employer's representative.
- 4.2.2** The Contractor assesses the condition of existing cladding and notifies the Employer's representative of any cladding that requires replacement. The Employer's representative approves replacement notification before the Contractor starts replacing existing cladding.
- 4.2.3** The Contractor supplies and fits plastic sheets over floors, gratings, and plant surrounding the areas where lagging is removed, to effectively prevent littering of lagging in the surrounding area. The contractor will ensure that any insulation spillage onto the surrounding areas is cleaned immediately.
- 4.2.4** Old lagging is discarded in plastic bags and placed in a designated area approved by the Employer's representative.
- 4.2.5** The Contractor must ensure housekeeping in all areas after insulation and cladding replacement activities.
- 4.2.6** The Contractor puts measures in place to prevent damage to the Employer's equipment when performing the Services. The cost for replacing or repairing any damage to the Employer's equipment is for the Contractor's account.
- 4.2.7** The Contractor will be required to ensure that where asbestos materials are handled, that they comply with asbestos regulation of the occupational health and safety Act 85 of 1993.
- 4.2.8** Dust levels are to be maintained below those referred to in Eskom Procedures and Standards.
- 4.2.9** The Contractor or appointed subcontractor shall be accredited by the Department of Labour and the Employment to handle asbestos. Loss of accreditation may result in termination of the contract.
- 4.2.10** The Employer's representative reserves the right to inspect and carry out any checks of the Service.

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4.3 The contractor's provisions

- 4.3.1** The supply of labour for the erection, alteration and dismantling of scaffolding during outages, maintenance and project activities;
- 4.3.2** Supervision and inspection for the erection, alteration and dismantling of scaffolding;
- 4.3.3** Supply of all consumables, scaffolding materials, including execution and all other items associated with providing a satisfactory service;
- 4.3.4** The removal, replacement and repair of thermal insulation and cladding during outages, maintenance and project activities;
- 4.3.5** The supply of labour and supervision for removal and installation of insulation;
- 4.3.6** The removal, collection and disposal of asbestos and asbestos contaminated material to the disposal site.
- 4.3.7** The removal, collection and disposal of Ceramic wool contaminated material to the disposal site.
- 4.3.8** The supply of transport for the labour force, equipment, call-outs, after normal working hours, weekends and public holidays;

4.4 The employer's provisions;

- 4.4.1** The site and lay down area for offices and storage of equipment;
- 4.4.2** 380V 63A and 220V 15 Amp facilities;
- 4.4.3** Tie-in point for ablution facilities;
- 4.4.4** Ablution facilities are available within the Power Station boundaries;
- 4.4.5** Potable water supply;
- 4.4.6** Plant permits where required prior to work commencing;
- 4.4.7** Outage programs and updates;
- 4.4.8** Medical services are available at the medical centre in case of emergency and expenses incurred are for the Contractor's account.
- 4.4.9** Telecommunication installations and telephone accounts are for the Contractor's account.
- 4.4.10** The Employer will generally provide the dumping areas for waste lagging and cladding.

4.5 Base Crews and other resources

- 4.5.1** The Contractor provides permanent staffing according to the number and designations agreed upon with the delegated Site Service Manager.
- 4.5.2** Where applicable, the Contractor maintains all year round the agreed base crew for the designated Power Station. The base crew may be shared between the designated Power Stations, as mutually agreed between the parties, but will not be less than the total agreed on sites.
- 4.5.3** During major maintenance tasks, overhauls, outages and project specific work the base crew staff may manage and co-ordinate these major maintenance tasks, outages and project specific work.

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4.5.4 The base crew is supervised by the Contractor. Changes to the base crew are negotiated with the Services Manager and must be confirmed in writing.

4.5.5 Major maintenance tasks, overhauls, outages and project specific work may require additional resources on a temporary basis. The Contractor supplies these additional temporary resources based on a Task Order for the project or work is issued to this effect.

4.5.6 The contractor's base crew normal working hours are to (as closely as possible) match those of the Employer's maintenance department working hours.

4.6 Specifications and standards

4.6.1 The supply, erection and dismantling of scaffolding shall be in accordance with SANS 10085-1: The design, erection, use and inspection of access scaffolding.

4.6.2 The removal, disposal and / or storage of thermal insulation and the repair, replacement, or renewal thereof, as per 240-56247004 – Thermal Insulation Standard (Eskom Standard).

4.6.3 The removal and handling of asbestos as per the Occupational Health and Safety Act no 85 of 1993, including Asbestos Regulations.

4.7 Audits

4.7.1 The Employer's representative may in accordance with a predetermined programme carry out audits on the Contractor's processes supporting any work done or to be done in terms of this contract, as well as on the work actually carried out.

4.7.2 The Employer's representative shall give the Contractor notice of the intention to perform an audit in order that the Contractor may provide a representative observer.

4.7.3 Depending on the findings of such an audit, the Employer's representative may notify the Contractor of an NCR. The Contractor shall notify the Employer's representative of the actions he/she intends to take to clear the NCR, and by when he/she will have taken them (actions)

4.7.4 The Contractor maintains a database system to record and track all NCR's raised and reports these to the Employer's representative monthly.

4.8 Permit to work system

4.8.1 The contractor's employees shall be trained within the terms of Plant Safety Regulations as applicable to each site. The contractor shall ensure that there is a Responsible Person in terms of PSR for any work performed on the plant. This will require individual to successfully complete a written and oral examination for the Plant Safety Regulation. The contractor shall have Responsible Person from the start of the contract.

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5. AUTHORISATION

This document has been seen and accepted by:

| Name & Surname | Designation |
|------------------|--|
| Lebo Serekwa | Senior Consultant Boiler |
| Siyabonga Mahaye | Middle Manager Outage Execution |
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6. REVISIONS

| Date | Rev. | Compiler | Remarks |
|-------------|------|--------------|--|
| August 2024 | 0.1 | Lebo Serekwa | First Draft Document for Comments Review Process |
| August 2024 | 0.2 | Lebo Serekwa | Final Draft Document after Comments Review Process |
| Sept 2024 | 0.3 | Lebo Serekwa | Additional updated completed, Final Draft |
| Sept 2024 | 0.4 | Lebo Serekwa | Additional updated completed, Final Draft |
| Sept 2024 | 1 | Lebo Serekwa | Final Document for Authorisation and Publication |

7. DEVELOPMENT TEAM

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

- Lebo Serekwa
- Siyabonga Mahaye
- Moeletsi Masoga
- Maropeng Seshoka
- Johannes Falatse
- Segomotso Choche
- Sabelo Mnguni

8. ACKNOWLEDGEMENTS

None.

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APPENDIX A: SITE ADDENDUM

A1. Addendum to scaffolding and thermal insulation contract

Power Station:....

National Contract Number:....

Period: Start Date....TO End Date.....

Maintenance – 46.....

Outage – 46.....

Outage – 46.....

Date:....

| Employer | Appointment |
|--|----------------------------------|
| Service Manager | <i>Service Manager Name</i> |
| <i>(Site Service Manager and DCF Holder)</i> | <i>Site Service Manager Name</i> |
| <i>(Additional Delegation)</i> | <i>Outages (Name)</i> |
| <i>(Additional Delegation)</i> | <i>Maintenance (Name)</i> |

| Contractor | Appointment |
|--------------------------------|---------------------------|
| National Contract Manager | <i>Name</i> |
| <i>(Site Contract Manager)</i> | <i>Name</i> |
| <i>(Additional)</i> | <i>Outages (Name)</i> |
| <i>(Additional)</i> | <i>Maintenance (Name)</i> |

A2. Description of the works and resources

1. Description of the works
2. Base crew and other resources
3. Key people (Contractor)
4. Outage Resources
5. Contractor's management and supervision

A3. Technical subject matter definition (core scope)

1. Introduction
2. Boundaries/Terminal Points
3. General exclusions

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A4. Site specific

1. Meetings
2. Documentation
3. Risk Register
4. Safety file
5. Tax invoice
6. Health and safety, the environment and quality assurance
 - a) Health and Safety Arrangements
 - b) Eskom lifesaving rules
 - c) Plant Safety Regulations
 - d) Fire Precautions
 - e) Health and safety facilities on the Affected Property
 - f) Reporting of incidents
 - g) Vehicle Safety
 - h) Company Branding
7. Environmental constraints and management
 - a) Work carried out in terms of
 - b) Hazardous substances
8. Plant & Materials provided "free issue" by the Employer
9. Working on the Affected Property
 - a) Employer's site entry and security control, permits, and site regulations
 - b) Security and Access Arrangements
 - c) Police clearance
10. People restrictions, hours of work, conduct and records
 - a) Working Hours
 - b) Removal from Site
 - c) Records of Contractor's Equipment
 - d) Site services and facilities
 - e) Provided by the Employer
 - f) Provided by the Contractor
 - g) Contractor's yard (Will depend on site to site)
11. Control of noise, dust, water and waste
 - a) Waste Disposal
 - b) Noise
 - c) Tests and inspections

A7. Non-exclusive scope to be executed on site (also refer to section 3.3 above).

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