Eskom	Scope of Work	Kusile Power Station

Title: **Kusile Power Station MPS 265 Mill Services, Major Overhaul and Critical Spares Scope of Work**

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Compiled by	Supported by	Functional Responsibility	Authorized by
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Content

1. Introduction

Kusile Power Station Management has decided to outsource the total MPS 265 Mill Maintenance Services, Major Overhaul, PA ducting, Dampers Maintenance service function and supply of critical spares to a suitably qualified, experienced, Contractor. This document describes the detail of the applicable plant areas, scope of work, standards, quality, requirements, specifications, terms & conditions as well as the criteria to be met to qualify for the tender.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to define the specified MPS 265 Mill Maintenance Services, Major Overhaul, PA ducting, Dampers Maintenance service function and supply of critical spares scope of work activity requirements for Kusile Power Station.

The station is expected to perform at 85% EAF, 10% PCLF and 5% UCLF, and the specified MPS 265 Mill Maintenance Services, Major Overhaul, PA ducting, Dampers Maintenance service function and supply of critical spares activities and management strategy must support this requirement, so that the milling plant contributing to less than 0.5% UCLF. It is therefore imperative that the successful and suitably qualified Contractor aligns his/her organization fully to these specified scope activities and processes laid down in this document.

2.1.2 Applicability

This document shall apply throughout Eskom Kusile Power Station.

2.1.3 Effective Date

The effective date of this document will be the date of authorization.

2.2 Normative/Informative References

The following documents contain provisions that, through reference in the text, constitute requirements of this document. At the time of publication, the editions indicated were valid. These documents are subject to revision and users are responsible to ensure that the most recent editions of the documents listed below are used.

2.2.1 Normative

[1] 237 - 0016 Rev 0: Integrated Business improvement – Prevention and Improvement Standard

[2] 240-86851633: Foreign Material Exclusion

[3] 32 - 726 Rev 0: Mandatory S.H.E. Requirements for the Eskom Procurement and Supply Chain Management Process

Note: Annexure C: S.H.E. Requirements for Tender Enquiries Annexure D: S.H.E. Tender Evaluation and Scoring Card Annexure E: Supplier Suspension Process

[4] 36 - 505 Rev 1: Personnel and Entities Performing Welding Related Special Processes on Eskom Plant

[5] 36 - 942 Rev 0: Arc Flash Protection Specification

[6] Act No 107 of 1998: National Environmental Management Act, 1998

[7] Act No 14 of 2009: The National Environmental Laws Amendment Act, 2009

[8] Act No 73 of 1989: The Environment Conservation Act, 1989

[9] Act No 102 of 1980: National Key Points Act, 1980

[10] Act No 36 of 1998: National Water Act, 1998

[11] Act No 85 of 1993: Occupational Health and Safety Act & Regulations, 1993

[12] GGR 0992: Plant Safety Regulations

[13] 32-846 Rev 0 Operating Regulations for High Voltage Systems

[14] NMP47-7 Rev 0: Application of KKS Plant Coding

[15] 36 -702 Rev 1: Remnant Life Monitoring

[16] 240-105658000: Supplier Quality Management Specification

[17] 240-106628253: Standard for Welding Requirements on Eskom Plant

[18] ISO 9001 – Quality Management Systems.

[19] OHS Act - Occupational Health and Safety Act and Regulations (Act No.85 of 1993)

[20] 240-105453648 – Fossil Fuel Firing Regulations Standard

2.2.2 Informative

[21] 240-85498379 Kusile Power Station Milling Plant Maintenance Strategy

2.3 Definitions

Definition	Explanation
Contractor:	Service provider contracted for supplying specific service to Eskom, Kusile Power Station.
Employer:	Eskom, or Eskom Kusile Power Station

2.4 Abbreviations

Abbreviation	Explanation
BOM	Bill of Material
ISO	International Standards Organisation
KKS	Kraftwerk Kennzeichen System

Abbreviation	Explanation
NEC	New Engineering Contract
OEM	Original Equipment Manufacturer
PCLF	Planned Capability Loss Factor
SAP	Systems, Applications, Products (Plant Maintenance, Procurement, Finance and Materials Management) integrated maintenance management system.
SOW	Scope of Work
UCF	Unit Capability Factor
UCLF	Unplanned Capability Loss Factor
QA	Quality assurance
QC	Quality control
QCP	Quality control plan
SANS	South African National Standards
SAP PM	SAP Plant Maintenance
SAP	Systems, Applications, Products (Plant Maintenance, Procurement, Finance and Materials Management) integrated maintenance management system.
SHE	Safety, Health, Environment
PW	Permit to work
ORHVS	Operating Regulations for High Voltage Systems
FFFR	Fossil fuel firing regulations

2.5 Roles And Responsibilities

Note: Further roles and responsibilities can be obtained from the NEC3 TSC book.

Activity	Responsible	Accountable	Consult	Inform
Compilation	• Senior Technician	• Mechanical Maintenance Manager	• Maintenance Manager	• All
Revision and Template update	• Senior Technician • System Engineer	• Mechanical Maintenance Manager	• Maintenance Manager • Documentation Officer	• All
Implementation	• Contractor • Technician • Senior Technician • Mechanical Maintenance Manager	• Contractor • Technician • Senior Technician • Mech. Maintenance Manager	• Maintenance Manager • System Engineer	• All

2.6 Process For Monitoring

In case of any additions, subtractions and/or amendments to the contents of the scope of work or any part of this document, prior the revision date, the Mechanical Maintenance Manager shall appoint a technician or senior technician to effect the necessary changes and to use the most current approved template for new revision.

2.7 Related/Supporting Documents

The following additional documents are attached and form an integral part of this scope of work. Copies of the relevant Employer performance standards can be made available on request.

[1] B114103-35-99-GM03-00001 Technical Documentation Pulveriser Plant MPS® Mill.

3. Requirements

3.1 The Employer

1. Performance is measured by the Employer against those areas which contribute to the Employer's business and the Contractor shall be compensated accordingly. (e.g. Reliability, Availability and Safety).
2. Areas of measurement include the Employer's key business indicators and will be defined at contract initiation with increments on a year-to-year basis for the duration of the contract.
3. Employer shall provide training for PSR, ORHVS, FFFR and any other training as deemed necessary by the Employer.
4. The contract entered with the Contractor is non-exclusive and work against this contract can only be performed upon receipt of a task order.
5. Employer to provide Special tools unique to MPS 265 mills where applicable.
6. Defects must be raised on the system to address any plant deviations.
7. The Employer and Contractor in this SOW is committed towards the following.
   a. Retention of critical skills
   b. Continuous cost reduction
   c. Health & Environment Safety
   d. Transfer of maintenance experience and skills
   e. The employer shall supply all lubricant required for the milling plant for the contract duration
   f. The employer shall be responsible for mechanical and hot splicing of the feeder belt

3.2 The Contractor

1. This contract is for preventative, predictive, corrective maintenance (breakdowns) and opportunity scheduled mill maintenance, PF Piping and Milling PA Ducting and dampers

2. The Contractor shall implement a program of continuous improvement to optimize component performance, achieve cost reductions and reduce system and equipment failures. The employer will review and achieve such programs
3. The Contractor shall be responsible for all mechanical maintenance as per Employer's instructions, processes and systems.
4. The Contractor shall be responsible for the inspection, maintenance, repair, bench testing and replacement of all types of valves associated with this SOW.
5. The Contractor shall be responsible to provide a competent person for the maintenance of all hydraulic related equipment regarding this scope SOW.
6. The Contractor shall be responsible for all components alignment requirements within this scope of work.
7. The following complementary services to improve Plant and labour performance can be defined as follows.
   a. Procedure and documentation writing
   b. Compile and improve task lists
   c. Compile QCP's and Check list
   d. Implement approved design and modification
   e. Spares management
   f. Technical advice
   g. Component failure analysis reporting
8. The Employer may request the Contractor to ensure that an accurate description of spare parts is maintained in the Employer's stores, and the Contractor informs the Employer as to any recommended changes.
9. The Contractor is to ensure that any service rendered does not interfere with the Employer's scheduled work and should align himself with the Employer's work control management process.
10. Should the Employer become aware of any changes to the activity schedule (programme of notifications), the Employer may issue the Contractor with a revised programme.
11. All works will be subject to anytime inspection from the Employer.
12. The Contractor maintains all year round, agreed base crew at Kusile Power Station which is supervised by the Contractor with any changes to the crew being negotiated and agreed upon with the Employer.
13. The Contractor will utilise the rotable process for all refurbish able spares items. Employer to provide appropriate training.
14. Containment and clean-up of spillages is viewed to be very important for plant housekeeping and any spillage caused because of the Contractor shall be cleaned by the Contractor.
15. The Contractor shall perform Oil, PF and air leak checks on all responsible plant areas and inform the Employer's representative accordingly.
16. The Contractor shall ensure the integrity of plant labelling and that deficiency with regards to KKS labelling is reported immediately.

17. The Contractor must ensure that they have Responsible Persons (in terms of PSR and ORHVS) for any work performed on plant.
18. All maintenance technically qualified (above semi-skilled) Contractors shall be trained and authorised (in terms of PSR and ORHVS) within 6 months of the contract start date.
19. The Contractor must ensure that all personnel successfully complete a written examination for the relevant regulation based on the Eskom Fossil Fuel Firing Regulations.
20. The Contractor to assess the works and determine required tools and provide the tools standard list of tools required to be supplied for a base line
21. The Contractor shall assist in the implementation, recommendations and corrective actions which are identified by the Kusile Power Station Condition monitoring programme, including EtaPRO performance & condition monitoring programme.
22. The Contractor shall implement a program of continuous improvement to optimise plant performance and reduce system and equipment failures.
23. The Contractor shall participate in improvement programs as stipulated by the employer.
24. The contractor shall be responsible for total lubrication management by ensuring that toping up of the oil and drainage is done within specified timeline
25. The contractor shall be responsible for supplying competent manpower, skills and tools to tile the chutes, duct and piping
26. The contractor shall keep minimum stock of spares listed and approved by the employer for maintenance purposes (Appendix A1)
27. The Contractor shall participate in improvement programs as stipulated by the employer
28. The Contractor shall be responsible for purchasing and delivering of Milling plant Critical Spares (Appendix A2) to Kusile Power Station on as and when required basis.

3.3 Management And Reporting

1. The type of reports, level of detail and frequency of reporting will be mutually agreed by the Employer and the Contractor during the contract negotiation phase of this agreement. These may change from time to time on request by the Employer.
2. The Contractor to be represented at all production and outage related meeting which may be daily, weekly or monthly.
3. The Contractor to be represented at all Employer safety meetings.
4. The Contractor to be represented at any ad-hoc meetings that may arise to address any production or safety related matters.
5. Liaison meetings shall be held with the Employer's Representative or his/her delegate on a monthly basis to discuss any technical details, or concerns.

3.4 Contractor's Management, Meetings and Key People

1. Before work starts on site, an inaugural meeting is held with the Contractor and the Employer, to explain in detail all requirements of the Site Regulations.

2. The Contractor is issued with a file of current Site Regulations on arrival. The file remains theproperty of the Employer and the Contractor is responsible for its maintenance and updating to include new or revised regulations as issued by the Employer.
3. The Contractor must ensure that all personnel operating mobile equipment and vehicles are authorised where applicable, this includes but not limited to.
   a. Forklifts
   b. Mobile Cranes
   c. Cherry Pickers
   d. Sky Jacks
4. The Contractor shall be responsible for the regular inspections and daily equipment checks of the mobile equipment and vehicles including record keeping.
5. The Contractor must ensure that all personnel performing work on the plant are authorised,this includes but not limited to.
   a. Confined space locations
   b. Working at heights
   c. Heat stress areas
   d. Hazardous substances

3.5 Communication And Correspondence

1. All correspondence includes.
   a. Kusile Power Station
   b. Employer's Contract number
   c. Contract description
   d. Correspondence subject matter
   e. Employer's name and contact details
   f. Contractor contact details
   g. Date
2. Where appropriate the correspondence includes the Employer's reference and is delivered as a single package.
3. All communications from the Contractor are numbered sequentially with a prefix as advised by the Employer. The Employer responds in like manner. The prefix and numbering system is decided upon at the Inaugural meeting.

3.6 Quality and Documentation Control

1. The Contractor shall ensure that any witness, hold, and inspection points are strictly adhered to.
2. The Contractor to ensure that all measuring and test equipment are calibrated at all times & proof thereof must be readily available.

3. All Quality References and Standards as stipulated in this document will be adhered to.
4. Work will only be conducted with an Employer approved Quality Management Programme.
5. The Contractor shall submit to Eskom a method statement and detailed quality control plans for the maintenance services, remanufacture, refurbishment or repair of all components covered in this scope. QCP's should cater for the manufacture or repair of individual components. The supplier should also provide a time base production schedule to Eskom prior to starting work.

3.7 Project Implementation Plan

1. The Contractor shall supply a project implementation plan including at least the following:
   a. Site establishment
   b. Manpower plan
   c. Organogram
   d. SHE plans

3.8 Manpower requirements

1. The number of maintenance staff required to execute the works is to be decided by the Contractor after his/her assessment of the scope of work and submitted to the Employer for approval.
2. The successful Contractor shall utilise/provide skilled and suitably qualified staff with current experience in, but not limited to, the following disciplines.
   a. Occupational Health and Safety Act 85 of 1993
   b. NEC contract management
   c. Quality Management Control and Assurance procedures
   d. Spares optimisation
   e. Procedure writing
   f. BOM compilation
   g. Task list development/review
   h. Draft QCP for different works
3. Staff must meet minimum requirements of Eskom job descriptions, with additional requirements specified where applicable.
4. All staff brought onto site in connection with this work scope should be able to fluently speak, understand, read and write in English.
5. Proof of Contractor and staff qualifications is to be supplied on request by the Employer.
6. The Contractor ensures that all staff being brought onto Kusile site have a valid fitness certificate based on the specified plant man-job specification.
7. Provide daily supervision of all related plant through trained and competent personnel to ensure that inspections & work activities are conducted daily.

3.9 Re-Commissioning

1. All Plant equipment maintained shall be commissioned as per site specific procedure after any maintenance intervention.
2. The Contractor shall be responsible or held liable for any defects arising from maintenance/operational faults twenty-four hours after an intervention, provided that the equipment has been placed into service.

3.10 Works Information

The Milling Plant

Applicable Plant Area	**Boundaries of Plant Area**
Milling Plant	The Milling Plant is defined as the plant and equipment interfacing with coal, that exists between the following points. - the coal bunker (excluding bunker inlet chute), and - outlet of the mill classifier including the gate valve (HHE 11-51 AA501). It has the following plant within its boundary. **Coal Bunker** The plant and equipment interfacing with coal, that includes the following. - bunker walls and lining, and - bunker hopper and lining. **Feeder** The plant and equipment interfacing with coal, that includes the following. - the bunker outlet shut-off gate valve, and - the raw coal pipe between conveyor and mill. This implies the following plant and equipment. - bunker outlet shut-off gate valve

	- transition chute with compensator - feeder belt conveyor system (including drive train) - fuel bed controller - coal weighing system - raw coal piping with compensator - purge air inlet damper - feeder outlet chute - clean out chain conveyor system (including drive train) - feeder housing - feeder outlet shut-off gate valve **Mill (Vertical Spindle)** The plant and equipment interfacing with coal, that includes the following points. - raw coal inlet chute to the mill, and - outlet of the classifier including isolating gate valves This implies the following plant and equipment. - grinding elements (i.e. track & rollers) - mill body - static classifier - loading frame and tension rods - hydraulic system, - discharge duct - reject box including upper and lower hydraulic gate valves - rejecting system including pumps and piping - seal air fans (include. all sealing medium supply) - all lubrication sets, - drive unit (i.e. motor and gearbox) - common mobile mill turning device - mill air supply inlet (including control & isolating dampers, rotating throat) **Milling Plant Primary Air and Sealing air systems** The plant and equipment interfacing with clean air, that includes : - Cold air ducting and dampers

	- Hot air ducting, and dampers - PA Fan outlet ducting. - Seal Air Fan and associated ducting and dampers

3.10.1 Applicable Scope of Work

1. All Mechanical maintenance shall be executed according to the following maintenance strategies:
   a. Kusile Power Station Maintenance Strategy for the Coal Milling Plant.
   b. Kusile Power Station Maintenance Strategy for PF Pipe and Burners.

2. Inspection, testing, maintenance and replacement of the following.
   a. Drive unit coupling
   b. Mill motor bearings
   c. Gearbox
   d. Lubrication system maintenance (i.e. valves, pumps, filters/strainers, etc,)
   e. Oil lubrication heat exchangers
   f. Mill housings and wear plates
   g. All internal components of the mill (i.e. nozzle rings, grinding rollers and tracks, loading frame, tension rods, pendulum joints and adjustments, reject scrapers etc)
   h. Hydraulic system including cylinders
   i. Seal air system
   j. Steam system used for purging
   k. Classifier
   l. Classifier chute liners
   m. Classifier vanes
   n. Reject box including upper and lower hydraulic gate valves and rejection water system
   o. Feeder system
   p. All valves, Pneumatic and hydraulic actuators,
   q. Dampers and orifice.
   r. All manholes, doors and inspection hatches including all bolts, gaskets and rubber seals
   s. Inspect and maintain integrity of drive unit base and all holding down bolts.
   t. Maintain related compressed air distribution system.
   u. Mill motor mounting and dismounting
   v. Electrical actuator mounting/dismounting.

3.11 PF Piping

Plant Area	Boundaries of Plant Area
PF Piping	The PF Distribution system is defined as the plant and equipment interfacing with PF and primary air, that includes the following points. - exit point of the PF from the mill classifier excluding the isolating valve, and - Inlet to the PF Burner (square flange). This implies the following plant and equipment. **PF Piping** - PF pipe work & ducting - Expansion bellows - Supports

3.11.1 Applicable Scope of Work

1. Inspection, testing, maintenance and replacement of the following:
   a. PF piping and connections
   b. All ceramic lined bends and expansion joints
   c. Hangers and supports (Hot and Cold inspections)
   d. PF system dampers and valves including actuator mounting/dismounting.

3.12 Primary Air Ducting

Plant Area	Boundaries of Plant Area

PA Ducting	The PA Distribution system is defined as the plant and equipment interfacing with coal and primary air, that exists between the following points. - exit point of the Primary Air from the PA Fan including the isolating dampers, control dampers, quick close dampers, and ducting - Hot Air ducting and dampers - Cold air ducting and dampers - Seal Air fan and ducting - Inlet to the Mill housing This implies the following plant and equipment. **PA Ducting** -PA hot and cold ducting, pipe work & Dampers - Expansion bellows - Supports - Seal air fan and ducting

3.12.1 Applicable Scope of Work

1. Inspection, testing, stroke checking, maintenance and replacement of the following:
   a. PA Cold and Hot air ducting, and connections
   b. All dampers and valves in the flow path and expansion joints
   c. Hangers and supports
   d. PA system dampers and valves including actuator mounting/dismounting.

3.13 Key Performance Indicators.

KPI	Intent of KPI	Year-On Year Target Requirement	Initial Year Performance Target
UCLF Contribution (GPSS Data/Mills Specialist Report)	1. Ensure UCLF (FLL & PLL) is progressively reduced and that targets are met and sustained.	Year 1 - < 1.2% UCLF contribution from current performance Year 2 - < 1.0% UCLF contribution from previous FY performance Year 3 - < 0.8% UCLF contribution from previous FY performance Year 4 - > 0.6% UCLF contribution from previous FY performance Year 5 - > 0.4% UCLF contribution from previous FY performance	< 1,2% UCLF contribution

PM Compliance (SAP Stats)	1. Ensure maintenance work 100% ready before being scheduled into the 2-week look-ahead and 1-week frozen scope (WMS, Spares etc.) 2. Ensure PM tasks are completed 100% as per philosophy, and that no controllable tasks have been omitted. 3. Measure new PM backlog being added to existing backlog (measure of Scheduling accuracy)	Sustained at 100% compliance for work within Contractor's control	100% compliance for online PMs
PM Schedule Compliance (SAP Stats)	1. Indicator is a measure of Planning and Scheduling effectiveness. 2. Measure how accurately and effectively the Contractor meets scheduled work compliance.	All scheduled work should be completed within 10% of the scheduled timeline/ due dates e.g. 3 monthly PM - no extension beyond 9 days of initial planned date.	All scheduled work should be completed within 10% of the scheduled timeline/ due dates e.g. 3 monthly PM - no extension beyond 9 days of initial planned date.
CM (Defects) Break-In % (SAP Stats)	1. Measurement of % new CMs breaking into the "frozen" week and the close-out thereof, i.e. % of P1 CMs resulting in scheduled PMs/ CMs being rescheduled or execution delayed. 2. Measurement of improvement culture to address and execute PMs and reduce CMs over time	<10% of emergent work added during the work week	<10% of emergent work added during the work week
Mean Time To Repair Service (8 Days/24hrs)	1. Measurement of Planned durations vs Actual durations of maintenance interventions	100% compliance to baselined durations	100% compliance to baselined durations

Mean Time To Repair Overhauls (21 Days/24hrs)	1. Measurement of Planned durations vs Actual durations of maintenance interventions	100% compliance to baselined durations	100% compliance to baselined durations
PM Backlog Catch-Up (SAP Stats)	1. Measure of effectiveness of resourcing increase, and Planning & Scheduling to execute both new and overdue PMs 2. Contractor involvement in ownership, and planning of outstanding backlog.	100% of all backlogged PMs and sustained	100% for all executable (ready to be performed) PMs
CM (Defects) Backlog CatchUp (SAP Stats)	1. Measure of effectiveness of resourcing increase, and Planning & Scheduling to execute both new and overdue CMs	100% of all backlogged CMs and sustained	80% for all executable (ready to be performed) CMs
PM/CM Ratio	1. Measure PM/CM ratio per work week which is required to be at 80/20	Following years targets will be based on current/ first year measurements, with the intent of achieveing 80/20 by year 3 and 90/10 by year 4, which should be sustained until contract expiration.	Measure PM/CM ratio
NCRs Accepted / Repeat Findings (Quality Department Stats)	1. Continuous improvement & error prevention	< 1 annually	< 4 within first year
Technical Support Reporting (Engineering/Maintenance, GPSS to be used to determine duration of breakdown, Contractor reports)	1. Provide weekly reports on core plant areas: PF leak inspections and repair status report, housekeeping status report. 2. Submit a failure report of all mill breakdowns >24Hours, indicating what was found on inspections and how it was repaired, include pictures of failures. 4. Submit Complete Data Pack for mill service and overhauls.	100% reports submitted within 24 hours of incident/ failure	> 80 % within first year
PSR Authorizations (TRAINING DEPARTEMENT STATS)	1. For the sake of this contract ALL Artisans, Senior Artisans (Team leaders), Supervisors, Planners and site Managers must be AUTHORISED in terms of	100% Authorised every 2 years for ALL Artisans, Senior Artisans (Team leaders), Supervisors, Planners and site Managers	PSR authorisation of ALL Supervisors, Senior

	Plant Safety Regulations on the core scope of this contract. 2. Contractor involvement in ownership and accountability to compliance of plant safety regulations. 3. Ensure contractor has enough personnel authorised to cover all shifts and work execution of works required on the plant.		Artisans (Team leaders) and Site Manager after the first 12 months.
FFFR Competency (TRAINING DEPARTEMENT STATS)	1. For the sake of this contract all artisans, Senior Artisans (Team leaders), Supervisors, Planners and site Managers must be competent in terms of Fossil Fuel Firing Regulations on the core scope of this contract. 2. Contractor involvement in ownership and accountability to compliance of Fossil Fuel Firing Regulations . 3. Ensure contractor has enough personnel competent to cover all shifts and work execution of works required on the plant.	100% competency every 2 years	100% competenc y
Housekeeping (Service Manager's discretion)	1. Mills where work should not have spares laying in and around the mill and or vicinity i.e spider rings, grinding rings, gearboxes, pf pipes etc. 2. Where work is in progress, equipment and spares should be adequately placed within good housekeeping prescripts.	Sustained at 100% compliance for state of plant within Contractor's control.	Sustained at 100% compliance for state of plant within Contractor' s control.
Overtime Management (Task order and Assessment reports)	1. Ensure Management and monitoring of overtime as per set agreed targets 2. Compliance to allowable overtime as per labour law	100% compliance on each Task order	100% compliance as per targets agreed upon between Service Manager and Site Manager

Maintenance Percentage Rework	1. Ensure high standard of workmanship quality 2. Address root causes which result in recurring failures 3. Allows focus on timeous completion of PMs 4. Reduces/ eliminates CMs	10% reduction every year	30%

3.14 Exclusions

1. Scaffolding & Insulation
2. Coal Bunker rope access inspections.
3. Non-Destructive Testing
4. Unauthorised Modifications
5. Civil Maintenance
6. Electrical Maintenance
7. C&I Maintenance
8. Condition monitoring
9. Refurbishment of Motors
10. Refurbishment of Mill Gearbox
11. Re-metaling of Motor Bearings

3.15 Tender Requirements

A proposal is to be submitted by the tenderers for the above-mentioned scope of work.

a. Hereafter a contract shall be negotiated with the successful Contractor.

b. The appointment of successful Contractor is at Eskom's (The Employer) sole discretion considering the factors which Eskom considers relevant.

4. Acceptance

This document has been seen and accepted by:

Note: Initials not acceptable

Full Name and Surname	Designation
Mokwena Mokhabela	System Engineer Milling Plant
George Mthimkhulu	Senior Engineer Engineering
Siyakudumisa Mtsweni	Manager Boiler Engineering
Sithokozile Hlongwa	Engineering Group Manager
Percy Masethe	Senior Advisor Boiler Maintenance

Full Name and Surname	Designation
Hennie Pretorius	Snr Advisor Engineering
Lettie Botha	Chief Engineer Prof Engin

5. Revisions

Date	Rev.	Compiler	Remarks
May 2026	7	Mokwena Mokhabela	
February 2026	6	Musa Ngwane	Additional of PA ducting and Critical Spares
September 2024	5	Mokwena Mokhabela	none

6. Development Team

1. Mokwena Mokhabela Milling plant system engineer
2. Bongumusa Ngwane Chief Engineer

7. Acknowledgements

N/A

Appendix A –Additional Information

A.1 Minimum Spares list

QTY per Mill roller	DESCRIPTION OF SPARES REQUIRED	Total QTY (per set of 3 Rollers)
	GRINDING ROLLER YOKE ASSEMBLY	
1	Grinding roller yoke; 2234 x 1379 x 912, Material: EN-GJS-400-15U(GGG-40)	3
1	Wear protection plate; Plate 524 x 957 x25, Material: EN 1,0038	3
1	Wear protection plate; Plate 524 x 957 x25, Material: EN 1,0038	3
12	Hexagon socket head cap screw; M20 x 45, Material: 10,9 galvanized	36
12	Locking edge washer; VSKZ 20 , Material: Spring steel galvanized	36
1	Wear protection bottom; Plate 861 x 299 x 10, Material: EN 1,0038	3
1	Wear protection bottom ceramic linier; Ceramic liner 1/2", Material: 92% AL203	3
2	Hexagon socket head cap screw; M30 x 120, Material: 10,9 galvanized	6
1	Wear protection; 624 x 266 x25, Material: EN 1,0038	3
4	Hexagon socket head cap screw; M20 x 45, Material: 10,9 galvanized	12
4	Locking edge washer; VSKZ 20 , Material: Spring steel galvanized	12
4	Hexagon head screw; M56 x 50, Material: 5,6 galvanized	12
4	spring lock washer; A 56, Material: Spring steel galvanized	12
6	Hexagon head screw; M24 x 45, Material: 5,6 galvanized	18
6	spring lock washer; VSK 24, Material: Spring steel galvanized	18
1	Tube Protection box; 508 x 11, Material: EN 1,0305	3
12	Hexagon socket head cap screw; M12 x 35, Material: 10,9 galvanized	36
12	Locking edge washer; VSKZ 12, Material: Spring steel galvanized	36
1	Plate for protection box; Plate 10, Material: EN 1,0038	3
1	Round 16; Round 16, Material: EN 1,0038	3
1	Roller tyre; 2070 / 1440 x 700, Material: EN-GJN-HV600 (XCr23)	3
1	Clamping ring; 1531 / 1165 x 190, Material: EN 1,0038	3
12	Hexagon socket head cap screw; M42 x 535, Material: EN 1,7709	36
12	Washer ; 43 x 6, Material: EN 1,0159	36
1	Wear protecting ring; 1531 x 1531 x10, Material: EN 1,0038	3
12	Hexagon socket head cap screw; M12 x 30, Material: 10,9 galvanized	36
12	Locking edge washer; VSKZ 12, Material: Spring steel galvanized	36
3	Wear protecting ring back; 1319 x 506 x20, Material: EN 1,0038	9
12	Hexagon socket head cap screw; M12 x 35, Material: 10,9 galvanized	36
12	Locking edge washer; VSKZ 12, Material: Spring steel galvanized	36
QTY per Mill	**DESCRIPTION OF SPARES REQUIRED**	**Total QTY (3 Mills)**

QTY per Mill roller	DESCRIPTION OF SPARES REQUIRED	Total QTY (per set of 3 Rollers)
	GRINDING ROLLER BEARING	
1	Axle; 1034 x 539; Material: EN 1,221	3
1	Hexagon head screw plug; G1 / 1/2A x16; Material: 5.8	3
1	Sealing ring; A48 x 55 x 2; Material: CU/ISOPLAN	3
1	Clamping disk plate; Plate 45; Material: EN 1,0038	3
3	Hexagon head screw; M 36 x 113; Material: EN 1,7709	9
3	Disk / Washer; 37; Material: EN 1,0401	9
1	Back of bearing plate Clamping ring; plate 533 x 533 x35; Material: EN 1,0038	3
12	Hexagon socket head cap screw; M12 x 45; Material: EN 10,9	36
12	Locking edge washer; VSKZ 12; Material: spring steel	36
1	Feather key; 90 x 45 x 272; Material: EN 1,0503	3
1	Venting filter; ANSELM-F1451 / G 1/8"; Material: EN 1,0401	3
1	Locking disk Axle; 441 x 41; Material: EN 1,0038	3
3	Hexagon head screw; M36 x 127; Material: EN 1,7709	9
3	Spring disk; 90 x 45 x 5; Material: EN 1,8159	9
3	Spring plate; 15; Material: EN 1,5415	9
1	Cylindrical roller bearing single row NU31/500; EMA / VE900; Material: Special steel	3
1	Self aligning roller bearing double row24164; CC; Material: Special steel	3
1	Bearing Bush; 1527 / 486 x 719; Material: EN-GJS-400-15(GGG-40)	3
3	Safety plate plug; 42 x 145; Material: EN 1,0330	9
3	Safety bolt plug; 63; Material: EN 1,0037	9
3	Hexagon head screw; GIA x16; Material: 5.8	9
3	Sealing ring; A 33 x 39 x 2; Material: CU/ISOPLAN	9
4	Sealing plug; M18 x 24 x1,5; Material: EN 1,0038	12
4	Sealing ring; A 10 x 14 x 1; Material: CU/ISOPLAN	12

A.2 Critical Spares list

QTY per Mill	DESCRIPTION OF SPARES REQUIRED	Total QTY Required
MILLING PLANT CRITICAL SPARES		
3	Grinding Roller complete without Tyre	3
3	Grinding Roller Yoke	3
1	Complete feeder (Excluding feeder belt)	1
1	Mill Housing/Casing	1
1	Mill Turret	1
1	Mill Loading Frame	1
1	Classifier Inner and outer cone	3

7.1 Tools and devices

To be supplied by the Employer

Serial Number	Description	Drawing Reference
1	Lever for tie rod bolt Level - 1x per unit	B114103-35-43-IG04-00121-
2	Erection sleeve for tie rod bolt Sleeve- 1x per unit	B114103-35-43-IG04-00122-
3	Erection hold for anchor bolts Erection hold 2- 1x per unit	B114103-35-43-IG04-00124-
4	Centring pin for grinding track carrier Centring pin - 3x per unit	B114103-35-43-IG04-00125-
5	Oil measuring stick inflexible Oil measuring stick - 1x per unit	B114103-35-41-IG04-00001-
6	Lifting & dismantling device for grinding segments comp. lifting & dismantling device - 1x per unit Dismantling grinding segments, assembly consisting of: -Beam IPE - 1x -Hexagon head bolt/disc M24-4x -Complete tum buckle - 1x -Bushing- 1x -Spur gear hoist - 1x	B114103-35-43-IG04-00071- B114103-35-43-IG04-00154-
7	Alignment bolt gearing Alignment bolt - 4x per unit	B114103-35-43-IG04-00126-
8	Alignment rods for grinding roller Alignment rods - 3x per unit	B114103-35-43-IG04-00077-
9	Lifting device for grinding roller Complete lifting device for grinding roller - 1x per unit	B114103-35-43-IG04-00086-
10	Lifting device for roller tyre Complete lifting device - 1x per unit	B114103-35-43-IG04-00079-
11	Mounting device for grinding roller (tum buckles) Complete tum buckles/supports – 6x per unit (2 x per grinding roller)	B114103-35-43-IG04-00093-
12	Dismantling grinding roller, Pulling of yoke Dismantling grinding roller, Pulling of clamping ring Dismantling grinding roller, Removal of axe Dismantling grinding roller,	B114103-35-43-IG04-00131- B114103-35-43-1G04-00132- B114103-35-43-IG04-00133- B114103-35-43-IG04-00134-

	Removal of roller bearing Dismantling grinding roller, Removal of cylinder bearing Dismantling grinding roller, Removal bearing internal ring Complete dismantling device - 1x per unit, consisting of: -Dismounting plate - 1x -Lifting eye bolt-3x Threaded rod M56-4x -Hexagon nut/washer M56-8x -Threaded rod M36x540-3x -Hexagon nut/washer M36-6x -Threaded rod M36x1300-3x -Hexagon nut/washer M36-9x -Threaded rod M48-3x -Hexagon nut/washer M48-6x -Hydraulic cylinder - 4x Hand pump-4x -Hydraulic hose-4x -Quick-connect socket - 4x -Hexagon nut/washer M10 - 4x Forcing ring - 1x -Intermediate piece - 1x -Complete removal device cylinder roller bearing - 1x -Intermediate plate - 1x -Dismounting ring - 1x	
13	Gear dismounting device Gear dismounting device - 4x consisting of: -Support-4x -Shim plate 110 and t5 - each 4x -Shim plate 12, 11 and t0.5-each 8x -Adapter piece - 4x -Hydraulic cylinder with accessories - see no.12 Gear unit disassembly plan consisting of: -Bracket-2x -Hexagon head bolt/nut M20-4x -Roller skates-4x Hexagon head bolt M12 - 16x Hydraulic cylinder with accessories- see no.12	B114103-35-43-IG04-00148- B114103-35-43-IG04-00160- B114103-35-43-IG04-00158-
14	Hydraulic swing-out device grinding roller. Complete device - 1x per unit	B114103-35-43-ID04-00021-
15	Support hydraulic cylinder/coupling piece. Complete support-3x	B114103-35-43-IG04-00159-
16	N2 filling- and test device - 1x per unit	
17	Wear templates, measurement report Measurement report - 1x per unit Wear template, grinding segment Wear template, grinding segment - 1x per unit Wear template, grinding roller Wear template, grinding roller - 1x per unit	B114103-35-41-IG04-00011- B114103-35-41-IG04-00012- B114103-35-41-IG04-00013-
18	Tool for grooved nut tie rod Complete tool - 1x per unit	B114103-35-43-IG04-00162-
19	Tool for grinding roller adjustment Complete tool - 1x per unit	B114103-35-43-IG04-00115-