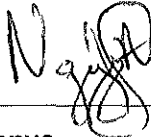
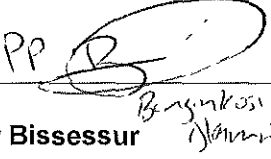
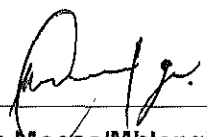


TILING SERVICES ON THE BURNERS, AND DUCTS RELATED PLANT AT MAJUBA POWER STATION

	Procurement SOW	Technology
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PART 3: SCOPE OF WORK

Document reference	Title
	<i>This cover page</i>
C3 1	<i>Employer's Service Information</i>
C3 2	<i>Contractor's Service Information</i>

PART C3 SCOPE OF WORK
STATION

TILING SERVICES ON THE BURNERS, AND DUCTS RELATED PLANT AT MAJUBA POWER

C3.1: EMPLOYER'S SERVICE INFORMATION

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ESKOM HOLDINGS SOC LIMITED

ENQUIRY NUMBER

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1 Description of the service

1.1 Executive overview

Provision of Tiling services in the burners, Mills and ducts Related Plant at Majuba Power Station

1.2 Employer's requirements for the service

The service is the provision of Tiling on the Burners, Mills and Ducts at Majuba Power Station

Take note that all measurements are in millimeters

1.3 Bottom turning vanes - HNA14/24 BR010

1.4 Full tiling on top of turning vane. Approximately 2 new vanes to be tiled and repairs to be done on damaged tiles

1 4 1 Area 7200000

1 4 2 Type of tile WPT4

1.5 Nose tiles to be fitted on leading edges of vanes. Replace severely eroded tiles.

1 5 1 Area 1600000

1 5 2 Type of tile WL4-1194B

1.6 Area below turning vanes to be tiled, floor and the sides 300mm up.

1 6 1 Area 7800000

1 6 1 Type of tile W01

1.7 Primary Vertical duct - HNA14/24 BR010

1.8 Slanted vertical duct behind the turning vanes and both sides 300mm wide to be tiled.

1 8 1 Area 2500mmx2000mm + 2 x 300mm x 2500mm

1 8 2 Type of tile W01

1.9 Repair/ Replace dislodged chamfer tiles at Vertical duct upstream compensator flow plates.

1.9.1 Area 4800000

1.9.2 Tile type W01

1.10 Additional repairs to "block" repair area, Rear wall 2m x 1.5 high.at Vertical duct between compensators and side walls 300mm wide.

1 10 1 Area 7800000

1 10 2 Type of tile W01

1.11 Repair/ Replace dislodged chamfer tiles at Vertical duct downstream of compensators

1 11 1 Area 4800000
1.11.2 Type of tile W01

1.12 Fit tiles on the vertical duct above the damper

1 12 1 Area: 2000mm x 3000 x 3 sides and 2000mmx4000mmx1side
1.12.2 Type of tile W01

2 Primary damper

2.1 Tile damper blades

2.1.1 Area 7761800
2.1.2 Type of tile W01

2.2 Fit tiles on the damper seal strip (nose tile).

2.2.1 Area 1260800
2.2.2 Type of tile WL4-1194A

2.3 Tiling of damper side wall seal strip

2.3.1 Area Chamfer- 1576000 and Normal tile - 1576000
2.3.2 Type of tile special and W01

3 Top turning vanes

3.1 Top turning vane surface tiling to be done and repairs to be done on damaged tiles

3.1.1 Area 1800mmx1200mm x 5 vanes
3.1.2 Type of tile W01

3.2 Nose tiles to be fitted on leading edges of vanes. Tiles which are severely eroded are to be replaced.

3.2.1 Area 1360000
3.2.2 Length 1800 x 5vanes
3.2.3 Type of tile WL4-1194A

4 Primary Horizontal duct.

4.1 Repair damaged/dislodged tiles on the primary duct side walls and roof above top turning vanes

4.1.1 Area $2 \times (1/2 \times 1800 \times 1800 \text{mm}) (\text{triangle sides}) + 1070 \text{mm} \times 1800 (\text{roof})$
 $+ (1070 \text{mm} \times 1800 \times 4) (\text{before comp floor}) + 600 \times 1800 \text{mm} (\text{vert duct corner})$
4.1.2 Type of tiles W01

4.2 Repair/ fit outstanding tiles on the upstream compensator flow plates.

4.2.1 Area 3456000
4.2.2 Type of tile W01

4.3 Repair / fit tiles on the upstream compensator side wall and roof.

4.3.1 Area $600 \times 1800 \text{mm} \times 2 + 1800 \times 3000 \text{mm}$
4.3.2 Type of tile W01

4.4 Repair /fit outstanding tiles downstream compensator flow plates

4.4.1 Area 3456000
4.4.2 Type of tile W01

4.5 Repair / fit tiles on the downstream compensator side wall and floor.

4.5.1 Area 4320000

4.5.2 Type of tile W01

4.6 Fit tiles on the roof before baffle plates

4.6.1 Area 3240000

4.6.2 Type of tile W01

4.7 Fit tiles on the first, second and third baffle plates.

4.7.1 Area first baffle plate – W01 -1000x1800mm and WPT4 - 47x1800mm , secondary baffle plate- W01 - 900x1800mm and W09 - 75X1800mm, third baffle plate - W01 - 900x1800mm

4.7.2 Type of tile first baffle plate – W01 and WPT4, secondary baffle plate- W01 and W09, third baffle plate - W01

5 Secondary Duct and dampers - HNA10/20 BR020

5.1 Fit tiles on damper dividing pillar and replace fallen tiles

5.1.1 Area 3000x1800mm per AH

5.1.2 Type of tile W01

5.2 Fit tiles on damper side wall seal strips

5.2.1 Area 3000x1800mm per AH

5.2.2 Type of tile W01

5.3 Fit tiles on the secondary duct compensator flow plates and lead edge.

5.3.1 Area W01 – 17700000, W01 – 10800000 and WPT4 – 1800000,

5.3.2 Type of tile W01 and WPT4

5.4 Fit tiles on secondary duct side walls.

5.4.1 Area 1705x3000 mm x4

5.4.2 Type of tile W01

5.5 Fit tiles on the secondary duct side walls before compensator

5.5.1 Area 500x3000 mm x4

5.5.2 Type of tile W01

5.6 Fit tiles on the small, medium and large turning vanes before the damper 5.6.1 Area small- 3000x900mm, medium- 3431x1500 mm and large- 3213x2650 mm

5.6.2 Type of tile W01

	Tile Area mm2	Description	Tile types	Amount of tiles
W01	15000	150 x 100 x 12 weld rectangular tile	W01	9714
WPT4	7050	150 x 47 x 12 weld rectangular tile	WPT4	2110
W09	7500	100 x 75 x 12 weld rectangular	W09	36
WL4-1197	3750	150 x 25 x 12 rectangular tile	WL4-1197	0
WL4-1194A	8000	100 x 80 x 20 nose tile - small nose	WL4-1194A	328

WL4-1194B	8000	100 x 80 x 20 nose tile - big nose	WL4-1194B	160
sq bar		10 x 10 x 6 m sq bar	sq bar	
WL4-1196		R35 half round shaft protection tile	WL4-1196	0
Special	5000	50x25x100 chamfer tile	Special	316
				12664

Duct tiling for 5 years

Inclusions on the scope

The Contractor is required to inspect all burners on the requested unit and write a report to document defects. All loose, damaged, missing or misaligned tiles are to be replaced. The surface area should be correctly prepared before the tiles are fitted (eg surface area cleaned with a wire brush to remove any dirt, contamination and rust that will affect the quality of the weld attachment and reduce the strength of the RB Grout). All tiles are required to be stud welded using a stud welding machine as well as secured into place with RB Grout. The cap is to be secured into place with RB Grout. A suitable wear resistant material (eg ceramite) should be used as filler between the tiles. Data sheets for grout and filler materials must be submitted to the System Engineer for approval prior to commencement of work. A maximum gap of 2mm or less is required between the tiles. The step between two tiles and the step between the cap and the tile should not exceed 2mm. Contractor should prepare to work an estimate of +/- 40 m² in total but the actual square meter coverage will be determined after inspection during the Outage.

Burners

- Draw up a QCP for the tiling of the PF tube and approve QCP before tiling commence
- Burner internal body preparation before tiling commence
 - Body of tiling surface should be at least 80% of the original body thickness
 - Surface must be prepared to ensure adequate adhesive/grout adhesion and shall fulfil the specific requirements of the adhesive/ grout supplier
- **Tile specification:**
 - All ceramic tile to be embedded in high temperature silicon that can take temperature up to 160 degrees Celsius
 - Sintered type ceramic tiles, containing not less than 89% alumina

- All adhesive and grouts employed in the construction of any ceramic lined assembly shall be non-flammable and capable of withstanding sustained operating temperature excursions above 120 degrees Celsius

- **Tiling specification and requirements:**

- Lining shall be in the form of ceramic key pieces built up to form a ring such that a complete ring is self-supporting when fitted inside the steel casing - The ceramic tiles shall be chamfered where necessary so that each tile is in intimate contact with adjacent tiles - Gap between tiles, caused by tolerances on the casing or tiles, shall be a maximum of 1mm, provided that each tiles are in intimate contact at least one point
- Joints in the direction of pulverised fuel flow shall be staggered - Tile edges, including weld-on plugs, shall not protrude into the pulverised fuel flow and shall be a maximum of 1mm below adjacent tiles downstream of the pulverised fuel flow
- The use of "weld-on" ceramic tiles shall not be permitted in pulverised fuel pipe bends of sound section
- PF tubes to be lined with 20mm thick ceramic tiles

- **Tiling is required as follow during unit outages:**

- IR Remove and replace missing and/or damaged tiles in 30 PF tubes inlet- and conical sections and re-tile 18 PF tube top half belly plate sections
- MGO/GO Remove and replace missing and/or damaged tiles in 30 PF tubes inlet- and conical sections and re-tile 30 PF tube top half belly plate sections

- **Tiling in PF tubes consists of the following (See figure 1):**

- The top half PF tube inlet section up to the ceramic tiles
- Top section of the PF inlet conical(Half-moon)
- Top section of the PF tube inlet(Belly plate top- half)

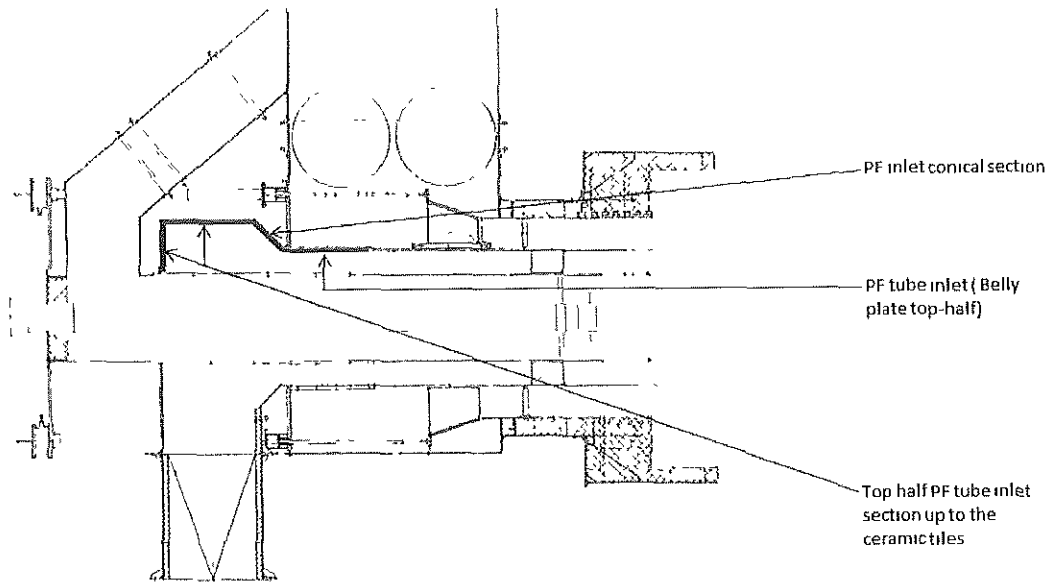


Figure 1: burner assembly

Milling plant Tiling for 5 years

The classifiers are currently lined with epoxy and window patches are done because of parent material getting removed. This also causes the classifiers efficiency to drop due to resistance caused by the epoxy lining. The new tiling scope of works during outages will be to remove the existing epoxy in the classifier, pF outlet to classifier duct to burner bend and also on the divider wall below the classifier duct and retile that area. The total square area to be tiled across the station is 3008M²(three thousand- and eight-meters square)

The Contractor should provide:

- Safety Officer for the people that will be on site
 - RB Grout that can withstand high temperatures (500°C) and tools to execute and complete the required service
 - A suitable wear resistant material that can be used as filler between the tiles (e.g. Ceramite) that can withstand temperatures of 500°C
 - Studding machine (s), grinding machine (s) treaded studs, flat washers and nuts that can fit on W07, W06 tiles (weld on tiles), etc. These are required for the installation and support of the above mentioned tiles
 - additional lighting (spark prevention), with extension cables
- The contractor should comply with all OSH act and Majuba Power Station safety requirements

The Employer will provide:

- All required weld-on & non-weld on tiles and ceramic sweets
- 220 V & 380 V power source only. Extension cable will be provided by the Contractor
- Sanitation area and water

Outages are subject to change, but this date might change to energy demand constraints. Any changes to this effect will be communicated to the contractor in time in order to allow adjusting plans to suite new dates.

6. Materials

6.1 All material stated in this contract will be provided by Eskom

□

7. Standards, specifications and Guidelines

The Contractor complies with the following Eskom Standards/Specifications/Guidelines

NO	Description
240-76667211	Outage Management Foreign Material Exclusion Standard
BIA/RM/STD/01	Safety, Health and Environmental specifications to be met by Contractors
BIA/QA/STD/01	QM 58
36-681	Generation Plant Safety Regulations
240-100979499	Personal Protective Equipment for Work at Heights Specification
32-95	Environmental, Occupational Health and Safety Incident management procedure
32-136	Contractor Health and Safety Requirement
32-345	Vehicle Safety Specification
32-418	Working at Heights
MAINT/MMD103 75	Lifting and Rigging
240-44175132	Eskom Personal Protective Equipment (PPE)

8. Interpretation and terminology

The following abbreviations are used in this Service Information

Abbreviation	Description
ABS	Anti-Lock Braking System
BCEA	Basic Conditions of Employment Act
BU	Business Unit
BTI	Boiler Inspection
COLD	Compensation for Occupational Injuries and Diseases
FAS	Fall Arrest System
FET	Further Education and Training
FME	Foreign Material Exclusion
IIW	International Institute of Welding

IN	Boiler Inspection
IR	Intermediate Repair
IWP	International Welding Practitioner
IWS	International Welding Specialist
Abbreviation	Description
KKS	Kraftwerk Kennzeichen System (unique identification system for plant components)
MGO	Mini General Overhaul
NEC	New Engineering Contract
PPE	Personal Protective Equipment
QCP	Quality control plan
SAIW	South African Institute of Welding
SANS	South African National Standards
SANAS	South African National Accreditation System
SETA	Skills Education Training Authorities
SOW	Scope of Work
SUPL	Supply
TBA	To be advised
WPS	Welding Procedure Specification
WPQR	Welding Procedure Qualification Record (WPQR)
WRB	Welding Rule Book
WQR	Welder Qualification Record

□

9. Management strategy and start up.

Flexibility with the start of outages

- 1 The outage start-date is stated on the Task Order
- 2 Movement to Outage dates can take place due to the country's demand for electricity
- 3 Any movement to Outage dates is to be communicated in writing by the *Service Manager* at least 48 Hours before outage Notification of change to the outage or maintenance opportunity date to the *Contractor* before 48 Hours to the outage
- 4 A new Task Order is to be issued, which specifies the revised Outage
- 5 The *Contractor* will be entitled to claim actual accommodation, travel and staff expenses incurred, if the *Contractor* received notification of outage movement within 48 hours of the actual start date of the outage as agreed upon in the latest Task Order revision

10. The Contractor's plan for the service

- 1 The *Contractor* submits a program in MS Project / Primavera format (confirmation required upfront)
- 2 The program includes
 - a Activities
 - b Durations in hours
 - c Predecessors
 - d Successors
 - e Total float
 - f. No constraints (linking to be done properly)
 - g No resources
 - h No unnecessary calendars (remove all)
 - I No empty lines
- 3 Daily feedback on progress required for duration of each task order program
- 4 The *Contractor* draws up a Quality Control Plan prior to commencement of the work, for approval by the *Employer* The *Employer* and the *Contractor* agrees on hold and witness points

11. Management meetings

- 1 Regular meetings of a general nature may be convened and chaired by the *Service Manager* as follows

Title and purpose	Approximate time & interval	Location	Attendance by:
Scope clarification meetings	From 18 months before start-date of an outage	Majuba Power Station, Specific conference room TBA	Site Manager, System Engineer, Outage coordinator and Quality Inspectors
Outage Kick-off meeting	Just before start-date of an outage	Majuba Power Station, Specific conference room TBA	Site Manager, Outage Co-ordinator
Overall Outage contract progress and feedback	Daily at 08 30	Majuba Power Station, Specific conference room TBA	Employer, Contractor and Supervisors
Daily outage meeting	Daily at 09 30	Majuba Power Station, Production boardroom (U4 16m level)	Site Manager, System Engineer, Outage coordinator and Quality Inspectors
Risk register and compensation events	Weekly on Thursday at 10h00	Majuba Power Station, Specific conference room TBA	Employer, Contractor
Safety meeting	Weekly on Wednesday at 14h00	Majuba Power Station, Production boardroom (U4 16m level)	Safety Officer
Assessment meetings	After completion of each task order	Majuba Power Station, Specific conference room TBA	Site Manager, System Engineer, Outage coordinator
Post mortem meeting	At task order completion	Majuba Power Station, Specific conference room TBA	Site Manager, System Engineer, Outage coordinator and Quality Inspectors
Maintenance Opportunity planning meetings	Just before start-date of an opportunity	Majuba Power Station, Specific conference room TBA	Site Manager, Maintenance Supervisor

- 2 Meetings of a specialist nature may be convened at times and locations to suit the Parties
- 3 Records of these meetings shall be submitted to the *Service Manager* by the person convening the meeting within five days of the meeting
- 4 All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting
- 5 Such minutes or register shall not be used for confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions

12. Contractor's management, supervision and key people

12.1. The key persons

Key persons of Contractor				
Designation				
Name				
Experience				
Tel				

- 1 The Contractor's Site Manager ensures that only competent persons be allowed to work on plant. The Employer's Service Manager is entitled to verify the qualifications of the Contractor.
- 2 The Contractor's supervisors must be knowledgeable about the conditions and scope of work contained in this contract and capable of executing the scope of work.
- 3 The Employer may, having stated reasons, instruct the Contractor to remove a key person. The Contractor then arranges that, after one day, the key person has no further connection with the work included in this contract.
- 4 The Contractor may not replace any of the key persons, without prior written request and approval thereof from the Employer.

13. Police clearance

- 1 All Contractor personnel to undertake Police clearance.
- 2 Certificates to be provided to the Security at least 2 weeks before commencement of work.
- 3 The Service Manager reserves the right to refuse entry to all persons whose criminal records indicate that their presence on site might create an unsafe and insecure environment to Majuba Power Station.
- 4 The following website can be used to guide the process:
http://www.saps.gov.za/services/applying_clearance_certificate.php

14. Supplier Development and Localisation Requirements

14.1. Recruitment of General Labour

- 1 The Contractor recruits 100% of all new recruits, of general labour from Dr Pixley Ka Seme local municipality, using the recruitment form provided by the department of labour. Contact details and application forms will be provided by the Service Manager on request.
- 2 In an event that new recruits are not from the defined Dr Pixley Ka Seme municipality, the Contractor needs to provide proof that the local municipality could not provide such individual.
- 3 The Contractor needs to update the Employer as well as the department of labour, in the event that there is a change in the staff complement e.g. dismissal, resignation, etc.

18. Low Service Damages

- 1 The low service damages will be applicable if the performance of the plant, where repair work was inadequately done, causes partial or full load losses. The following process and damages will apply:
 - a The defect(s) will be reported to the *Contractor* as soon as the Employer becomes aware of the defect(s)
 - b An opportunity will be arranged by the Employer for the repair and the *Contractor* will be notified at least 24 hours in advance of the opportunity to repair the defect(s)
 - c The *Contractor* is to be notified immediately of the Unit trip. An opportunity will be arranged by the Employer for the repair and the *Contractor* will be notified at least 12 hours in advance of the opportunity to repair the defect(s)
 - d If the inspection confirms that, the defect(s) is/are because of poor quality from the *Contractor's* work performed during an outage, a 0.5% damage of the total value of task orders raised for that outage per day will apply, until the defect(s) is/are resolved. The damages are capped at a maximum of 10% of the total of the task orders raised for that outage.
- 2 It is the *Contractor's* responsibility to keep a separate Safety file up-to-date (audited on a monthly basis for the duration of the contract) to cater for short notice call-outs for defects and maintenance opportunities.
- 3 Refer to the Low Service damages table below.

19. Low Service Damages Table

Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
1 Service delaying the Outage/opportunity maintenance Critical Path agreed schedule or Delaying other <i>Contractor(s)</i> from starting/completing their work or delaying the RTS of the unit	2% per total value of the Task orders for the Outage / maintenance opportunity per day	Limited to 15% of the total value of the Task Order(s) for the outage
2 Service delays not finishing as per agreed upon project plan submitted and approved by the <i>Service Manager</i>	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the outage
3 Failure to submit documents as per agreed upon Contract Document Submittal Schedule in this service agreement	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
4 Inadequate inspections (not fully complying with the given instruction)	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
5 Failure to update Daily Progress Report/program	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of Task Order Value

6 Failure to respond to an NCR within 3 days	0 5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
7 Failure to resolve an NCR within 30 days	0 5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
8 Failure to Handover completed data books per outage within 10 days from outage completion	0 2% per total value of the Task Order(s) for the outage per day	Limited to 5% of the total value of the Task Order(s) for the outage
9 Using Personnel which are not Qualified as per this service agreement	0 5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
10. Defect(s) is/are because of poor quality from the Contractor's work performed as per paragraph 2 9 during outages	0 2% per total value of the Task Order(s) for the outage per day	Limited to 5% of the total value of the Task Order(s) for the outage
11 Contractor not reporting safety incidents within the same shift to the Eskom Coordinator and Contract Service Manager	0 2% per total value of the Task Order(s) for the Outage	0 5% per total value of the Task Order(s) for the Outage

20. Documentation control

- 1 Safety files to be submitted and approved before an outage work commence as per client requirements, two weeks in advance
- 2 The *Contractors* Outage safety file will be handed over to the *Service Manager* after each outage
- 3 All NEC standard forms should be used e g Task orders, Early Warnings, Defect certificates and Assessments
- 4 The *Contractor* is responsible to plan the supply of the documentation during the various project stages and to provide the documentation in accordance with the *Contractor* Document Submission Schedule (CDSS) A document is thus any written or pictorial information describing, defining, specifying or certifying activities, requirements, procedures or results
- 5 The *Contractor* submits all documentation on a formal transmittal form to the *Service Manager*
- 6 All manuals, documents, drawings and engineering documentation shall be presented in British English in both software and hardware
- 7 All Communications will be filed and kept on site as it is crucial to have the correct communication structures These communication documents are to adhere to the NEC 3 Term Service Contract communication requirements
- 8 Planned Outage Scope of work to be issued to *Contractor* from the client 6 months in advance
- 9 Budget quotation for outage work to be submitted one week after SOW submission/SOW clarification
- 10 Compensation for Occupational Injuries and Diseases (COID) Certificate and letter of good standing must be valid at all times and submitted to the *Service Manager* at each anniversary of the contract These documents are to be submitted to the Eskom vendor database by the Contractor, before they expire

- 11 Two hard copies of the completed data packs submitted to the Service Manager An Electronic copy of all reports to be provided on CD/ DVD

21. Contractor Document Submission Schedule (CDSS)

Document Name/Description	Date/Time documents to be submitted
Supplier Localisation plan	Two weeks after contract award
Supplier Localisation report	Quarterly at the 2 nd of each 4 th month after the contract start date
A programme in Primavera or MS Project format as referred to document number (24085065548)	One week after receipt of Task Order Outages
Baseline risk assessment	One week after receipt of Task Order
QCP's	One week after receipt of Task Order for Outages,
Contractor's Safety file	Two weeks before start of work in case of outages
Safety file Audit	Every 30 days after approval of initial file until work for specific outage is complete
Inspection report	24 hours after inspection activity
Progress report	After Every Shift
Technical report and data pack	Within 5 days of completion of the services (per outage)
Updated monthly safety job statistics	1 st day of each month, using the reporting template that is provided by the Service Manager
Compensation for Occupational Injuries and Diseases (COID) Certificate and letter of good standing	At each anniversary of the contract or before current expiry dates on the documents

22. Invoicing and payment

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51 1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager's* payment certificate

The *Contractor* shall address the tax invoice to
Accounts Payable Services
Eskom Holdings SOC Limited
Majuba Power Station
Private Bag 9001
Volksrust
2470

and include on each invoice the following information

- 1 Name and address of the *Contractor* and the *Service Manager*,
- 2 The contract number and title,
- 3 *Contractor's* VAT registration number,
- 4 The *Employer's* VAT registration number 4740101508,
- 5 Description of service provided for each item invoiced based on the Price List,
- 6 Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT,

23. Health and safety, the environment and quality assurance

23.1. Health and Safety Risk Management

- 1 The *Contractor* complies with the health and safety requirements contained in the General Works Information
- 2 Eskom is a national key point and therefore strikes are not permitted. Strikes are to be managed by the *Contractor* at his/her own cost
- 3 The *Contractor* to have a dedicated Safety Officer on site at all times when work is performed. The Safety Officer to preferably have a National Diploma, but at least have a SAMTRAC or equivalent qualification

23.2. Statutory Safety

- 1 N/A

23.3. Reporting of Incidents

- 1 The Employer follows an incident prevention policy, refer to 32-95, Environmental, Occupational Health and Safety Incident Management Procedure, which includes the investigation of all incidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incident. The *Contractor* is expected to cooperate fully to achieve this objective. The Employer's Representative must be informed immediately of any incident before the end of the shift

NOTE: The reporting of the incident to the Employer's Representative, does not relieve the *Contractor* of his legal obligation to report incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act

23.4. Work Stoppages

- 1 The Employer takes safety serious and therefore lessons learned from other safety lost time incidents are shared with the whole workforce. These stoppages are compulsory and the *Contractor* will not be allowed to claim additional compensation for these stoppages
- 2 If the *Contractor* experiences a LTI, he/she might be expected to prepare a presentation and present it at a work stoppage that will be arranged by the Employer. The presentation content/template will be provided by the Employer

23.5. Health and Safety Arrangements

- 1 The *Contractor* must ensure that all his personnel attend a Health and Safety Induction Course prior to starting with the works. A one- (1) hour course will be provided by the Employer and will be valid for the duration of one- (1) year
- 2 The *Contractor* shall comply with the guidelines set out in the Majuba Standard BIA/RM/STD/01 titled "Safety, Health and Environmental specifications to be met by Contractors"

- 3 Safety Risk Management has the right and authority to visit and inspect the Contractor's workplace or site establishment to ensure that tools, machinery and equipment comply with the minimum safety requirements
- 4 The Employer's Representative shall be entitled to instruct the *Contractor* to stop work, without penalty to the Employer, where the Contractor's personnel fail to conform to safety standards or contravene health and safety regulations. The Employer's Representative is entitled to instruct the *Contractor* to discipline his employees and to enforce disciplinary action, and submit a report to the Employer's Representative. The *Contractor* shall implement additional health and safety precautions where necessary
- 5 The following Health & Safety requirements should be complied with
 - a The *Contractor* must supply a Certificate of Competency of his/her employees to work under the following conditions
 - i Confined Spaces
 - ii Heights
 - iii Heat stresses
 - iv Cold stresses
 - b The *Contractor* to provide the Employer with proof of free issue of adequate Personal Protective Equipment (PPE) to be used by his/her employees (preferably SABS approved). All PPE to comply with the Eskom PPE specification 240-44175132
 - c Noisy equipment and tools - no equipment or tools > 105db (A) may be supplied/utilised by the Contractor
 - d Sub-contractors - the principal *Contractor* must state if a sub-*Contractor* is going to be used and who the sub-contractor/s are. Proof must be given to Eskom that the subcontractor/s has/have the necessary competence and resources to carry out the work safely and to ensure that due care of the environment will be exercised
 - e Medical examination processes must be complied with

23.6. Vehicle and driver safety

- 1 All drivers, passengers and pedestrians must obey vehicle safety requirements in terms of the National Road Traffic Act, Act No 93 of 1996, as amended, including other relevant provincial or local requirements
- 2 Transportation of passengers open LDV's
With effect from 31 May 2006, no Eskom employee or *Contractor* would be allowed to transport passengers on the back of open light delivery vehicles (LDV's). It is a legal requirement to provide safe transportation of Eskom and *Contractor* employees – therefore the following will be enforced
 - a Ensure that no employee, including *Contractor* employees or any other person, when on an Eskom site and/or performing work for Eskom, is allowed to be transported in the back of open vehicles
 - b There will be cases where this may not be reasonable or practicable, namely where vehicles are used during line inspections on sites or on private roads, or similar cases, and in these cases such vehicles must be driven at less than 30km per hour or at a speed suitable to the prevalent conditions. In such cases, the carrying of passengers in the back of such open vehicles could be explicitly allowed, after
 - i a risk assessment has been carried out, indicating a very low risk,
 - ii mitigating factors have been identified to control any risk identified,
 - iii proper seating and handrails have been provided on the back of the open vehicle
 - iv These measures have been discussed at the relevant Health and Safety Committee Meeting and approved by the *Employer*
 - v is defined and contained in a formal written division's or BU's policy, including the appropriate mitigating factors,
 - vi Such a policy has been communicated to all employees and contractors. The above risk assessment findings/outcomes must be available at all times for audit purposes
 - c Tools and equipment must be properly secured
 - d Only authorised drivers may transport passengers
 - e Proof must be submitted on request in terms of valid roadworthiness of the vehicle/s

- f The above must apply to on site and off site transportation of passengers
- g No person may be transported in the back of vehicles closed by means of canopies, unless provided with factory-fitted or manufactured-approved, proper seating and safety belts, i.e. Crew cabs
- h The driver must ensure that no employees are transported in the back of open vehicles unless it is allowed in terms of a divisional or BU-specific policy as referred to in paragraph b above. This also applies to *Contractor* and *Contractor* employees when performing work for Eskom
- i The driver must ensure that all canopies are being properly fitted and secured and that all loose tools and objects in vehicles are properly secured
- j The driver must ensure that their passengers are seated and wear seatbelts at all times

23.7. Vehicle Standard minimum specifications

- 1 *Contractor* vehicles are to comply with the requirements specified in the Eskom Vehicle Safety Specification 32-345
- 2 The standard minimum specifications are applicable to all Eskom-owned vehicles and vehicles used when performing work for Eskom Holdings SOC Limited and its subsidiaries, including contractors (subsidised transport, contractors, consultants, and any person insured directly or indirectly by Eskom, driving a vehicle within or beyond the borders of South Africa) This includes vehicles owned, hired or leased by Eskom or its subsidiaries or any vehicle an employee makes available for Eskom-related business purposes
- 3 All vehicles used for Eskom business shall meet the following requirements
 - a Factory-fitted antilock braking system (ABS) for all vehicles
 - b Factory-fitted driver and passenger air bags
 - c Alarm/immobiliser, factory-fitted, and if not available by the manufacturer, it shall be fitted at approved fitment centres
 - d Factory-fitted power steering
 - e Tyres as per the manufacturer's specifications for the intended purpose
 - f Two emergency warning triangles
 - g Factory-fitted air conditioner
 - h Reverse beeper shall be standard on all heavy commercial vehicles, buses and construction equipment or vehicles being used on construction sites
 - i Refer to the standard for specific requires for Light Delivery Vehicles (LDVs), Heavy Commercial Vehicles, Minibuses, Midi-buses and buses, Trailers and caravans, Construction vehicles and Other requirements

24. Hot Work

The *Contractor* to comply with Eskom's Hot Work procedure

- 1 The Hot Work Monitor must be in possession of the following qualifications and training
 - a Basic fire extinguisher training
 - b Hot work monitor training
 - c Broad knowledge of welding, cutting, brazing, grinding, soldering and other hot work activities
 - d Must be able to read and write English
- 2 Hot work approval

Before hot work operations begin in a non-designated location, a hot work approval is required. Before the hot work approval is issued, the following conditions are to be verified by the Hot Work Monitor

 - a Hot work equipment to be used shall be in satisfactory operating condition and in good repair
 - b Where combustible materials, such as paper clippings, wood shavings, or textile fibres are on the floor, the floor shall be swept clean for a radius of 11m. Combustible floors (except wood on concrete) shall be kept wet, be covered with damp sand, or be protected by noncombustible or fire retardant shields
 - c Where floors have been wet down, personnel operating arc-welding equipment shall be protected from possible shock

- d All combustibles shall be relocated at least 11m horizontally from the work site. If relocation is impractical, combustibles shall be protected with fire retardant covers or otherwise shielded with metal or fire retardant guards or curtains. Edges of covers at the floor shall be tight to prevent sparks from going under them, including where several covers overlap when protecting a large pile.
 - e Openings or cracks in walls, floors, or ducts within 11m of the site shall be tightly covered with fire retardant or non-combustible material to prevent the passage of sparks to adjacent areas.
 - f Conveyor systems that might carry sparks to distant combustibles shall be shielded.
 - g If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire retardant shields or guards shall be provided to prevent ignition.
 - h If hot work is to be done on a wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side by relocating combustibles. If it is impractical to relocate combustibles, a fire watch on the opposite side from the work shall be provided.
 - i Hot work shall not be attempted on a partition, wall, ceiling, or roof that has a combustible covering or insulation, or on walls or partitions of combustible sandwich type panel construction.
 - j Hot work that is performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings, or other combustibles shall not be undertaken if the work is close enough to cause ignition by conduction.
 - k Fully charged and operable fire extinguishers that are appropriate for the type of possible fire shall be available immediately at the work area. If existing hose reels are located within the hot work area defined by the permit, they shall be ready for service, but shall not be required to be unrolled or charged. (Loan extinguishers are available from the Fire Department).
 - l If hot work is done in close proximity to a sprinkler head, a wet rag shall be laid over the head and then removed at the conclusion of the welding or cutting operation. During hot work, special precautions shall be taken to avoid accidental operation of automatic fire detection or suppression systems (for example, special extinguishing systems or sprinklers).
 - m Nearby personnel shall be protected against heat, sparks, slag, and so on.
 - n All welding machines and cutting torch trolleys are to be equipped with at least a 2,5kg dry powder fire extinguisher.
 - o If hot work has to be done in high-risk areas where fire systems cannot be impaired, a welding tent should be built around the object to be worked on i.e. Bulk Fuel Oil Plant.
- 3 Appointment of Hot Work Monitors
- a Eskom and each *Contractor* Company that is required to perform hot work shall appoint in writing at least one (1) hot work monitor for normal day-to-day maintenance related hot work/ outage related hot work. Additional hot work monitors may be appointed if the workload requires such appointments.
- 4 Hot Work Approval
- a The hot work monitor must complete a hot work approval form (Form Part 1) as per 32681 Plant Safety Regulations. Refer to the procedure for further information.

25. Confined Spaces

Such As Vessels, Mills, Culverts, Flues, Furnaces, Ducts, Pits, Sewers, Tunnels and Underground Chambers (Refer General Safety Regulation 5 of the OHS Act)

- 1 At least one door or manhole giving access to each confined space must be provided with a means to lock such door or manhole in the open position. A confined space warning sign must also be attached next to such entrance of a confined space when entry into this area will be required.
- 2 The door or manhole concerned must be locked in the open position and a confined space warning sign attached before any person is allowed to enter such confined space. The locking, or other preventative measure, must constitute an integral part of the isolation required before the permit to work is issued. Where such a door or manhole cover must be removed by a

maintenance person, provisos similar to those stipulated under (section 17 2 c and 7 11 2 b) must apply

- 3 Before any door giving access to a confined space is closed, the person closing such door must ensure that there are no persons inside the confined space, and that all tools, equipment and debris have been removed
- 4 Where a confined space can be isolated and adequately ventilated, this must be done before the space is environmentally tested and certified clear of all dangerous gases. Thereafter a gas test certificate and an environmental certificate must be issued before any person is allowed to enter. In addition
 - a Adequate ventilation, gas monitoring and thermal stress monitoring (heat stress – WBGT index - cold stress) must be maintained while persons remain in the space
 - b Only approved lighting and portable electrical tools shall be allowed, (Refer Electrical Machinery Regulation 10 of the Act)
 - c A permit to work must be issued
- 5 Where there is a possibility of dangerous substances being present in a confined space which cannot be effectively isolated and adequately ventilated, the following measures must be taken before any person is allowed to enter that space
 - a All practical steps must be taken to prevent the ingress of dangerous substances
 - b Every person who enters the confined space must wear approved self-contained breathing apparatus and must have competency for the equipment
 - c Every person who enters the confined space must wear a safety harness to which a rescue line is attached
 - d A rescuer must remain on duty outside the confined space and this person must maintain communication with those inside the confined space. The rescuer must control the rescue line(s) attached to the safety harness(es) and must assist in the removal of any person from the confined space in the case of an emergency. An additional set of breathing apparatus must be available for the use of the rescuer
 - e Adequate steps must be taken to ensure that all persons wearing breathing apparatus are withdrawn from the confined space before the end of the specified working duration of the breathing apparatus
 - f A permit to work must be issued
- 6 Where it is not possible to reduce the WBGT index to be below 30 for manual work, access shall only be allowed, if relevant training has been done and a local procedure is in place that explains in detail the access control and health and safety precautions as described in the environmental regulations. (Refer Environmental Regulations for Workplaces 2(4) of the Act)
- 7 If the original scope of work changes, a new permit to work must be issued, or if hazardous substances are used, the risk assessment, pre-work checklist, the environmental certificate, gas test certificate shall be re-evaluated and re-issued as required

26. Working on Heights

General

- 1 Wherever reasonably practicable, preference is given to the performance of work at ground level as opposed to in an elevated position
- 2 Where work in an elevated position is necessary, preference is given to fall prevention measures such as, but not limited to, effective barricading and the use of work platforms
- 3 Persons may only work from a fall risk position if a site-specific fall protection plan is in place and correctly implemented and consists of the following
 - a All appointments for the fall protection plan developer and implementer are in place
 - b One risk assessment, which is specific and incorporates the working at height risk assessment, as well as the site-specific risk assessment, has been completed for the work to be conducted
 - c Safe working procedure/task analysis and work instructions, approved by a competent person, are in place
 - d A fall rescue plan, along with necessary equipment and trained rescuers, is in place

- e Appropriate training, as determined by the risk assessment, has been provided
- f Appropriate height safety equipment and personal protective equipment have been issued to the individual
- g There are equipment inspection procedures and up-to-date inspection records
- h Individuals are medically fit to work at height, and records of this are kept
- i A site-specific risk assessment is performed
- 4 While work is in progress, adequate warning signs and/or barricades shall be used in all areas where there is a risk of persons being injured by materials or equipment falling from the work area. Barricades should be continuous and easily visible
- 5 A drop zone shall be established with appropriate warning signs and barrier tape or barricading, warning personnel below of workers above and potential falling objects

27. Risk Assessment

- 1 A risk assessment allows for careful examination of what could cause harm to people because of a work activity, and it allows one to take the necessary precautions to prevent the harm from occurring
- 2 The following hierarchy of controls has to be observed
 - a When considering work at height, a risk assessment must be conducted, form part of the health and safety plan to be applied on site and must include,
 - i the identification of the risks and hazards to which persons may be exposed to, ii an analysis and evaluation of the risks and hazards identified based on a documented method,
 - iii a documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified,
 - iv a monitoring plan, and v a review plan
 - b Working at height risk assessments shall take into account factors such as
 - i the necessity for the work to be done in an elevated position as opposed to on the ground,
 - ii barricading and other fall prevention measures, iii requirements of the safe work procedure, iv restrictions in fall distances and clearances,
 - v mobility required for the task, for example, degree of vertical or horizontal movement,
 - vi height being worked at, vii possible injuries, viii duration of exposure, ix frequency of performing these activities,
 - x type of work and ergonomic considerations, xi work site/area congestion,
 - xii potential/likelihood/causes of a fall occurring,
 - xiii endurance of workers, xiv risk control measures,
 - xv electrical hazards and safe clearances from overhead power lines, xvi structure (ease of access, secure footing, and compatibility with fall prevention and/or fall arrest equipment),
 - xvii terrain,
 - xviii restrictions with reference to working alone (a rescue must always be executable),
 - xix falling objects, and xx suitable anchor points
 - c Develop approved written safe work procedures/task analysis and work instructions for all elevated work and make them available to all persons carrying out the work. Standard procedures may be suitable for most work, however, unusual conditions or architectural features may require additional sitespecific procedures. The person supervising the work must ensure that safe work procedures/task analysis and work instructions are followed at all times

- d In the design phase, consider fall risks with regard to minimising risk, ease of access, anchor points, and avoidance as far as reasonably practicable
- e The risk assessment will determine the selection of suitable work at height equipment and systems for the work to be performed safely
- f Be aware of hazards resulting from adverse weather conditions, and where necessary, modify the work method accordingly
- g Determine the content and intervals of planned job observations during the risk assessment
- h The risk assessment must include the rescue plan
- i Persons working alone should have a practical way of performing a rescue in the event of an incident
- j Risk assessments must be performed and documented by competent persons. The mitigation process from the risk assessments must influence the content of the fall protection plan
- k In the case of live work, work has to be conducted according to standards and procedures while maintaining minimum safe working clearance
- l Take into account the risks associated with objects falling from heights. Tools and equipment must be safely secured and attached to the body or structure

28. Fall Protection Plan

- 1 A task-/job-specific fall protection plan shall be developed and approved by a competent person for any activity where there is a risk of a fall
- 2 A competent fall protection plan developer must be appointed according to 10(1)(a) of the Construction Regulations
- 3 The fall protection plan shall include a task-/job-specific risk assessment and requirements relating to the following
 - a Training programme for employees working from a fall risk position
 - b Appointments and authorisations
 - c The procedure addressing the inspection, testing, and maintenance of all fall protection equipment
 - d A risk assessment that is site-specific with regard to fall risks for work to be performed
 - e The processes for evaluation of the employees' medical fitness necessary to work in a fall risk position and the records of this (medical surveillance programme)
 - f Equipment use and specification
 - g Fall prevention, fall arrest, and fall rescue
 - h Method statements or safe work procedures/task analysis/work instructions
- 4 The fall protection plan and its requirements shall be integrated into the health and safety plan
- 5 Adherence to the fall protection plan is mandatory. An induction on the fall protection plan must be carried out for all relevant employees
- 6 The fall protection plan must be suitably amended in accordance with the risk assessment, equipment technology, standards, and legislation
- 7 The fall protection plan must be monitored and reviewed as required by the work performed and changes in hazards

FAS Training

- 1 All users of height safety equipment for working at height must be trained, assessed and declared competent for the specific height safety equipment and associated structures
- 2 Only service providers accredited by Eskom to present the basic Fall Arrest System and Rescue Course as per the working at heights procedure will be accepted and recognised as competent to provide competency for working at heights training. A list of the Eskom Accredited Service providers can be obtained from the Service Manager
- 3 Validity of FAS and rescue training
 - a There shall be no expiry date on official training, but at least one job observation on each user per annum, for example by a peer
 - b There shall be no expiry date on the certificate, but only the date of training
 - c Evaluation to be conducted every three years by an accredited trainer

- 4 The need for refresher training is determined by the employer, taking into account factors such as period of inactivity and changing circumstances as determined by risk assessments and job observations
- 5 Refresher training/workshops for rescue need to be run on a regular basis, at least six-monthly
- 6 At least two persons per team have to be able to perform rescues if work at height is involved
- 7 All personnel trained to perform rescues will be trained to first aid Level 2
- 8 Documented training records for all work at height training must be maintained

29. Lifting and Rigging

- 1 General Rigging Practices (applicable to critical and non-critical lifts)
 - a A pre-job brief shall be conducted prior to every rigging activity and shall include operating experience
 - b A visual inspection of all lifting equipment shall be done prior to each use
 - c Softeners shall be used on sharp corners and edges
CAUTION Failure to properly protect the lifting equipment from sharp edges can result in damage, to the lifting equipment and dropped loads
 - d No personnel are allowed directly below the suspended weight
 - e Loads shall not remain suspended without a qualified rigger or crane driver present
 - f Where a load cell is utilised, a load cell observer shall be appointed who shall stop the lift if the Pre-agreed load limit is likely to be reached
 - g The load path and lay down area shall be identified and walked down prior to the lift and barricaded to ensure
 - i The lay down area is capable of carrying the load (Weight and volume)
 - ii The lifting equipment can follow the load path while respecting the SWL of lifting equipment
 - iii No personnel shall be below the load at any stage on the load path
 - iv The load path is suitably barricaded and sign-posted
 - h Guide ropes may be used to guide loads however, at no stage shall a guide rope be tied to a person A suspended load may only be handled by hand when the load is below shoulder height and there is no risk of slipping or there is a confined space between the handler and the load
 - i When lifting concrete blocks or floor plugs, the following practices shall be observed
 - i Verify connection installed are intended as rigging points
 - ii Inspect the condition of the lifting points prior to the lift for corrosion, wear, cracks or deformation
 - iii Inspect the condition of the concrete block of floor plugs to the lift for cracks or physical damage
 - iv Verify load markings and the presence of hold down mechanisms

NOTE If wear is noted or in doubt, request non-destructive testing to be performed and / or visual inspection by the civil engineer
 - j Load cells shall be used under the following conditions
 - i It is a critical lift
 - ii The load cannot be reliably determined due to possible binding of other reasons

NOTE If a load cell cannot be used, then approval from the Technical Support Manager or his delegate shall be obtained to proceed with the lift
 - k A post lift inspection of lifting equipment shall be performed and tagged if any damage is noted and the lifting equipment store man informed
 - l The hoist chain or hoist rope shall be free from kinks and twists and shall not be wrapped around the Load
 - m The load shall only be lifted high enough to clear obstructions, where, multiple obstructions exist along the load path, the load shall be lifted high enough to clear the highest obstruction unless specifically noted otherwise in the critical lift plan NOTE The use of a guide rope is mandatory in these circumstances

- 2 Load Weight Determination
 - a The load weight shall be determined using one or more of the following methods
 - i Official design documentation or technical manuals provided by the manufacturer
 - ii Data plates, labels
 - iii Use of measuring equipment (dynamometer, spring balance or other load measurement tools)
 - iv Calculation using the method in Appendix 3
- 3 Non Power Driven Lifting Equipment Inspection and Maintenance
 - a Lifting equipment shall be inspected in accordance with the inspection and Maintenance program for lifting equipment
 - b The inspection program shall comply with the requirements of the occupational health and safety Act and its regulations with particular reference to the driven machinery regulations
 - c The inspection shall be conducted taking into consideration the manufacturers design standards
 - d Lifting equipment conforming SANS standards is preferred Approval shall be obtained from the manager for lifting equipment complying with alternative standards
 - e Personnel conducting lifting equipment inspections shall be trained and authorised to perform such Inspections
 - f Contractor lifting equipment shall be inspected prior to use by a person qualified to inspect the lifting equipment
- 4 Power Driven Lifting Equipment Inspection Maintenance
 - a Lifting equipment shall be inspected in accordance with the inspection and Maintenance program for power driven lifting equipment
 - b The inspection program shall comply with the requirements of the occupational health and safety Act and its regulations with particular reference to the driven machinery regulations
 - c The inspection shall be conducted taking into consideration the manufacturers standards
 - d Lifting equipment conforming to SANS standards is preferred Approval shall be obtained from the Manager for lifting equipment complying with alternate standards
 - e Personnel conducting lifting equipment inspections shall be trained and authorised perform such Inspections
- 5 Lifting Equipment Modification, Construction and Design Limits
 - a Lifting equipment shall not be operated outside its design limits unless a detailed design assessment is conducted by engineering and presented to the SME and the Common Plant Area Manager for approval
 - b Waiver applications or lifting equipment design changes shall be supported by the Common Plant Area Manager prior to submission to the legislative authority (department of labour)
 - c Design of lifting beams and structures carried out on-site shall be carried out in Accordance with an accepted design standard, which shall be indicated in the documentation utilising the station design process
 - d Lifting from supports that are not designated as lifting supports (e g Cable trays, Pipes, pipe supports and other plant structures) shall not be performed unless approved by the structural engineer prior to the lift
- 6 Lifting Equipment and Operations Personnel Training, Qualifications and Fitness
 - a Lifting equipment and operations personnel shall be trained in accordance with the training of lifting Equipment
 - b All lifting personnel shall undergo a medical exam annually to ensure that they are medically fit to perform lifting and rigging operations
- 7 Personnel Lifting
 - a The use of a Crane to hoist Employees on personnel platforms is prohibited except When the erection, use and dismantling of conventional means of reaching the worksite , such as a Personnel hoist, ladder, stairway, work platform of scaffold would be more hazardous or is not possible because of structural design or worksite conditions
 - b A documented pre-job brief is required to be performed with the Crane Operator, Signal person, Person-in-charge and the Employee(s) being lifted prior to the beginning of the task
 - c A trial lift is required to be performed prior to lifting personnel as follows
 - d Load the personnel platform to a weight equal to the anticipated live loaded weight the platform Travel the personnel platform to each location that work is to be performed

- e Just prior to hoisting Personnel, lift the platform a few millimetres off the surface and inspect the rigging for deficiencies
 - f The personnel platform may only be used to lift Personnel and not for other purpose such as handling materials
 - g All materials and tools for use during a personnel lift are required to be secured to prevent dropping
 - h It is important to evenly distribute materials and tools for use during personnel lift to prevent and unbalanced load
 - i Employees should keep all parts of the body inside the platform during hoisting and positioning of the platform
 - j The personnel platform should be tied off secured when entering or exiting a suspended platform
 - k Tag lines are required unless their use creates an unsafe condition
 - l Fall protection is required (except over water) for personnel working out of the platform The lanyard(s) for the fall protection should be connected to the load block or to a structural member of the platform capable of supporting a fall impact
 - m Exiting of the personnel platform is required to be performed in a slow, cautious manner
- 8 Scrapping Of Lifting Equipment
- a Lifting equipment that cannot be used due to it is not passing an inspection of load test must be taken out of service and scrapped
 - b The lifting equipment must be physically destroyed by cutting rope wire sling with an oxy acetylene-cutting torch, so that it cannot be used again
 - c This process of destroying unsafe lifting equipment must be witnessed by the GMR 2 1 who will record all destroyed equipment, and here then removed from the lifting equipment register

30. Burner, Ducts and Mills Tiling Safety

- 1 Work should be executed As per all Eskom and Majuba safety policy 32-95

31. Environmental constraints and management

The *Contractor* is required to ensure that all works are carried out as per the Eskom's Environmental Policy BIA/ENV

The *Contractor* shall make clear provision for as part of the tender submission and thereafter prepare the following documents upon awarding of the contract

- 1 An environmental management plan that is based on applicable legislation, which relates to their activities on site
- 2 An appointed, trained and competent person in writing, who will have the responsibilities of implementing all environmental requirements on a specific contract
- 3 The Aspects/Impacts register and an environmental management plan
- 4 All method statements, at a minimum addressing the activities that have significant environmental aspects
- 5 Proof of competence (certificates) of persons performing activities that could have significant impact on the environment
- 6 Environmental Management System certificate (if certified) if not, an environmental management manual and/or procedures
- 7 List of all Hazardous Substances to be used and their MSDS's
- 8 Environmental file to be kept on site by contractor

The *Contractor* shall ensure that persons in its employment are aware of the significant environmental aspects and related actual or potential environmental impacts associated with their work The *Contractor* shall be available for Environmental audits during work hours

The following environmental requirements are complied with at all times

- 1 Zero liquid effluent discharge

- 2 No chemicals will be dumped into the station drains or on the premises
- 3 No oil or waste will be dumped in an unauthorised area or unlicensed waste site
- 4 Asbestos will be handled and stored according to Act 15 of 1973 (hazardous substances Act)
- 5 No materials or waste will be burnt on site Hazardous substances shall be handled and stored according to the hazardous substances Act no 15 of 1973 No effluent shall be discharged into the public streams
- 6 The *Contractor* shall comply to the Construction Safety, Health, and Environmental Management 32-136
- 7 Environmental incidents shall be reported, captured and investigated as outlined in the latest version of the *Environmental, Occupational Health and Safety Incident Management Procedure* 32-95
- 8 The *Contractor* shall comply with any directive and/or instruction related to legislation and/or Eskom Procedures that is issued from the Environmental Department

32. Quality assurance requirements

Please note that Majuba Power Station was built according to BS EN standard The ASME standard will not be accepted

- 1 The *Contractor* is required to have SANS ISO 3834-3 certification Prove of SANS ISO 38343 certification to be submitted with the tender If the *Contractor* is not certified yet, proof of progress of being accredited to be provided with tender Accreditation to be granted within six months of contract start date, else contract may be terminated
- 2 The *Contractor* is required to have Welding Procedure Qualification Record (WPQR) and Welding Procedure Specification (WPS) to SANS 15614 - Part 1 for thickness range 3mm to 20mm as per the list below Proof to be submitted with tender
 - a SMAW welding of group 1 (Carbon steel)
 - b SMAW welding of group 8 (Stainless steel)
 - c SMAW group 1 to group 8

All WPS will be supported by a valid WPQR to SANS 15614 - Part 1 as stipulated in Eskom Welding standard 240-56241933
- 3 As per compliance requirements to SANS 3834-3, the *Contractor* to have at least 1 x level 1 Welding Inspector to SAIW requirements Proof of qualification to be provided with the tender
- 4 The *Contractor's* welders are all qualified for butt weld and fillet weld to SANS 9606 - Part 1 with the SMAW process Proof for valid qualification of 5 welders as well as proof of employment with the *Contractor* to be supplied with tender submission
- 5 The *Contractor* to have at least 3 years duct welding and structural steel welding experience Proof of previous contracts proving the experience to be provided
- 6 The *Contractor* submits QCP's 1 week after receipt of a task order
- 7 The Employer reserves the right to audit the Supplier

33. Foreign Material Exclusion

The following controls and practices comply

- 1 All system openings or access is covered except when the work is being carried out under a specific procedure
- 2 The specific opening is being monitored
- 3 Work, inspection, testing, sampling or surveying is in progress that requires the removal of the FME device

FME devices shall

- 1 Prevent the introduction of foreign material into the component or system during the cover's installation and removal
- 2 The cover must be clearly marked as an FME device, clean, sturdy and free from debris

- 3 Be secured so that they will not be sucked in or blown away by a pressure drop or surge of the system. The use of paper, plastic bags, rags or any other unauthorised materials are not permitted to be used as FME devices
- 4 Not be capable of damaging any critical surface and not show evidence of chemical decomposition during service or result in corrosive action
- 5 Internal FME devices, which seal off an opening from inside the system, must be used wherever practical to isolate the component or system opening
- 6 Where practical a removed component such as a valve bonnet, flange, and junction box cover should be used as an FME device
- 7 Internal closure devices shall be attached internally whenever possible to avoid their inadvertent loss into the system during work activities. Special consideration should be given during installation and removal of such devices
- 8 Inspect internal devices for damage prior to installation
- 9 FME devices should be clearly marked to prevent inadvertent removal or damage. Bright colours are recommended
- 10 All FME devices are to be recorded in a register

34. Procurement

34.1. People

34.1.1. Minimum requirements of people employed

- 1 Safety officers to be a person with a relevant qualification which is National diploma in safety Management/environmental Management, HIRA and Incident investigation
 - 2 Semi-skilled personnel are in possession of valid school senior certificate
 - 3 All project managers, site managers and project leaders must have undergone training in contracts management (e.g. NEC3), any technical discipline diploma (e.g. construction, civil, mechanical, electrical, C&I), managerial course (e.g. project management, etc.) from reputable institutions
 - 4 General Supervisors are qualified and in possession of a School senior certificate, and must have undergone supervisory training from a reputable institution
 - 5 The *Contractor* will provide trained personnel for the implementation of all work
 - 6 The *Contractor* remunerates his employees at not less than the proclaimed statutory wage (Minimum Wages Act). Failure in this regard will result in non-performance and therefore immediate termination of the contract
- In order to fully evaluate a tender, the *Contractor* is to submit an organogram, which is to include the relevant skills levels

The *Contractor* submits requests to change any pre-approved staff together with proof of qualifications for approval prior to changing the staff

34.1.2. Supervision

- 1 The *Contractor* provides Authorised Supervisor(s) in terms of the Plant Safety Regulations
- 2 The *Contractor* trains enough staff to cover for leave periods as well as night shifts, if required
- 3 Training will be provided by Eskom Majuba and is done according to a schedule, thus arrangements need to be made with the Service Manager well in advance
- 4 *Contractor* to have a Supervisor on site at all times

35. Key Competencies and Experience 35.1. Supervisors and/or Project

Managers/Supervisors:

- a Knowledge of PSR
- b Capability to read and interpret drawings

- c Ability to read and understand scopes of work
- d Technically competent on the use Microsoft Packages (excel, outlook, Microsoft word)
Proof of training required
- e Knowledge of how to generate inspection/ refurbishment reports
- f Maintain high standards despite pressing deadlines
- g Is alert in a high-risk environment, follows detailed procedures and ensures accuracy in documentation and data
- h At least Supervisory experience
- i At least 2 years power plant experience, preferably Eskom plant

39.3. Semi-Skilled

- a. Ability to use/operate the required equipment/tools
- b Maintain high standards despite pressing deadlines
- c At least 1 year relevant experience

40. Subcontracting

36.1. Preferred subcontractors

All subcontractors need to be approved by the Service Manager before the subcontractor gets to site

36.2. Subcontract documentation, and assessment of subcontract tenders

The *Contractor* prepares subcontract documentation The use of the NEC system is recommended on how subcontract tenders are to be issued, received, assessed and awarded

36.3. Skills Development

The *Contractor* complies with the skills development requirements contained in the SDL requirements section

41. Plant and Materials

41.1. Specifications

- 1 The *Contractor* to ensure that the material certificates are supplied by the *Employer* for all material used in the re-tiling
- 2 No material to be used without material certification

41.2. Plant & Materials provided “free issue” by the *Employer*

- 1 All materials will be supplied by the *Employer*
- 2 Scaffolding, lagging removal and replacement of lagging will be provided by the *Employer*

41.3. Contractor’s procurement of Plant and Materials

- 1 All tools and equipment used to refurbish the plant are supplied by the *Contractor*

42. Working on the Affected Property

42.1. *Employer’s* site entry and security control, permits, and site regulations

The Entry to site is only approved once the following is adhered to

- 1 The *Contractors* Safety file is to be approved by the *Employer’s* Safety department

- 2 All personnel must undergo screening for Criminal records and outstanding warrants
- 3 *Site-specific induction is to be done by all personnel Refer to the General Works information*

42.2. Permits

- 1 The *Contractor* will ensure that he/she is informed of all the requirements of Eskom's Plant Safety Regulations and ORHVS and that he/she at all times comply to the requirements of these Regulations
- 2 The *Contractor* ensures that at least two of his supervisors are trained and authorised as Authorised Supervisors in terms of the Plant Safety Regulations
- 3 Training is provided by Eskom Majuba and is done according to a schedule, thus arrangements need to be made with the Service Manager well in advance Hourly payment of the contractor's staff, while attending the course will be for the contractor's account
- 4 At least two supervisors should be authorised within 3 months of contract award

43. People restrictions, hours of work, conduct and records

43.1. Time Clocking

- 1 *The clocking system is essential for the contract to account as to how many people are on site and to be able to track if they have all knocked off*
- 2 *This will not be needed for the contract as it will be rate based*

43.2. Hours of work

- 1 Normal working hours is Eskom working hours
 - a Monday to Thursday **07:30 - 16:45**
 - b Fridays 07 30 - 12 30
- 2 Outage or maintenance opportunities working hours are
 - a Monday to Sunday **07:00 - 19:00 or as required by the SOW** (might require 24 hour shifts)
- 3 Overtime rules are adhered to as determined by the Department of Manpower
- 4 All Timesheets are to be kept for records purposes i.e man-hours worked safely etc
- 5 Other hours will be determined as per critical path activities during outages
- 6 Overtime to be approved by the *Service Manager*
- 7 Daily time sheet must be kept up to date of normal and overtime worked at all times

44. Health and safety facilities on the Affected Property

44.1. Waste Disposal:

Refer to the General Works Information

44.2. Medical Facilities:

Refer to the General Works Information

45. Records of Contractor's Equipment

- 1 The *Contractor* to declare all equipment and tools via a pre-set up list at the main entrance, where removal permit will be issued by Security personnel
- 2 *Contractor* need to have a list of inventory of their equipment on site
- 3 Proof of site entrance needs to be provided before equipment can be removed from site
- 4 The *Contractor* keeps these records If the records are lost, the Employer does not have the responsibility to issue a gate release permit and the *Contractor* might have to leave the equipment behind on site

45.2. Equipment provided by the *Employer*

- 1 Overhead cranes
- 2 The *Employer* is entitled to withdraw use of the said Equipment, should proper care not be ensured

46. Site Services and Facilities

46.1. Provided by the *Employer*

- 1 Toilets at the four corners of the power station
- 2 Power points where available own cables to be routed
- 3 Water points, where available
- 4 Compressed air (Service air), where available
- 5 NDT Services, to be arranged with Service Manager
- 6 Scaffolding, lagging and cladding removal and installation

46.2. Provided by the *Contractor*

- 1 Containers, for dressing rooms, office and dining
 - a Containers to be in an acceptable condition well maintained, no major dents, no rust on exterior walls
 - b Floors of containers to be in a good condition, no rust excepted as this poses a safety risk
 - c The only acceptable exterior colours allowed are blue, white or grey or any of the corporate Eskom colours (chart can be obtained from the Service Manager)
- 2 Office furniture, equipment and stationary
- 3 Tools, equipment and consumables
- 4 Portable 380V electrical distribution boards, and supply cables to and from the boards for all his power supply requirements to execute the services
 - a *Contractors'* Electrical Distribution Boards complies with OHSA as referred to in the Electrical Installation Regulations and the Electrical Machinery Regulations Each board brought on site has a certificate of compliance issued by an accredited person
 - b The *Contractors'* Electrical Distribution Boards must be installed at a time negotiated with the Electrical Maintenance Manager, or prior to the possession date Distribution boards will be connected to a 380V three-phase AC power supply by the *Employer*, only after the *Contractor* has submitted the valid certificate of compliance
 - c All *Contractors'* Electrical Distribution Boards are earthed to the steel structure of the plant
- 5 Accommodation
- 6 Transport
- 7 Meals The *Contractor* or any of his employees or subcontractors may buy take away meals from the fast food outlet on site, if available
- 8 Telecommunications
- 9 Everything else necessary for providing the Service

47. List of drawings

47.1. Drawings issued by the *Employer*

All relevant drawings are available on request from the Majuba Documentation Centre