

## PART 3: SCOPE OF WORK

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## C3.1: *EMPLOYER’S SERVICE INFORMATION*

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## 1 Description of the service

### 1.1 Executive overview

#### 1.1.1 Contract Objectives

The purpose of this contract is to provide maintenance services and technical support on regenerative air heaters as per Service Information and all documents referenced by it. This is applicable for on-line (running), routine, planned, emergency maintenance and outages. The Contractor Performs work under this Contract as specified in the Task Order.

The Parties respond to changing needs whilst also pursuing the Parties' long term goals.

To achieve this, the Parties have a mutual understanding of each other's expectations.

##### 1.1.1.1 The Parties are committed to the following:

- a) Continuous improvement of plant performance
- b) Provision and retention of critical skills
- c) Cost efficiency
- d) Safety (Zero harm policy)
- e) Plant reliability

##### 1.1.1.2 The Parties Undertaking

- a) Clearly define mutual goals
- b) Commitment by senior management to these goals and long term support to the objectives of this contract
- c) Integrity, trust and co-operation between the Parties
- d) Transparent reporting of invoiced costs and performance between the Parties
- e) Improvement programmes to enhance plant performance and achieve cost efficiencies
- f) Implementation of productive plant engineering, operating and maintenance expertise
- g) Excellent levels of safety and quality of workmanship
- h) Manage to have the appropriate critical skills available at all times
- i) The Parties respond to changing needs whilst also pursuing the Parties' long term goals
- j) Lack of Service Performance will be addressed by Low Service Damages Clauses by the *Employer* against those areas which contribute to the *Employer's* business.
- k) The *Contractor* provides mechanical maintenance, repair and complementary local based engineering and technical support services for Draught Plant Regenerative Air Preheaters for running, routine, planned and emergency maintenance, and outages as stated in the *Contract Document* and each Station Addendum. The *Contractor* performs all work assigned in a Task Order by the *Site Service Manager*.
- l) The *Employer* may not add, nor the *Contractor* accept, any tasks or work that is not normally within the *Contractor's* approved scope.

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### 1.1.2 Interpretation and terminology

The following abbreviations are used in this Service Information:

<b>Abbreviation</b>	<b>Meaning given to the abbreviation</b>
BCEA	Basic Conditions of Employment Act
CCA	Contractors Contract Administrator
CDSS	Document Submission Schedule
CoC	Certificate of Compliance
CW	Cooling Water
EPC	Engineering Procurement Construction
HP	High Pressure
INO	Incident Notification of Occurrence
ITP	Inspection and Test Plan
LRA	Labour Relations Act
MEIBC	Metal and Engineering Industries Bargaining Council
NCR	Non-Conformance Report
NEC	New Engineering Contract
OBL	Outside battery limits
ORHVS	Operating Regulations for High Voltage System
OSHAS	Occupational Safety and Health Advisory Services
PCM	Process Control Manual
QCP	Quality Control Plan
RCM	Reliability Centred Maintenance
SEIFSA	Steel and Engineering Industries Federation of Southern Africa
SHE	Safety Health and Environment
SOW	Scope of Work
UIF	Unemployment Insurance Fund
NDT	Non Destructive Testing
MWH	Megawatt Hour
QC	Quality Control
DIIR	Disabling Injury Incident Rate
GO	General Overhaul
FD Fan	Forced Draught Fan

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PA Fan	Primary Air Fan
ID Fan	Induced Draught Fan
AH	Regenerative Air Pre Heater

<b>Terminology</b>	<b>Definition</b>
Station Addendum	<p>A Station addendum is an agreed-upon addition signed by all parties to the original contract. It details the specific terms, clauses, sections and definitions applicable to each site. The Station addendum falls within the boundaries of the main agreement and cannot rule against the main agreement.</p> <p>The Station Addenda will be reformatted using the previous contract's Station Addenda content within 30 days of initiation of the Term Services Contract.</p>
Task Menus	Tasks menus are supplied by the Employer detailing activities for executing work. Activity Schedules are included in Attachment C.
<i>Service Manager</i>	A Contract Manager appointed by the <i>Employer</i> who is responsible for the National Supply Contract.
<i>Contractor Service Manager</i>	A Contract Manager appointed by the <i>Supplier</i> who is responsible for the National Supply Contract.
<i>Contractor's Representative</i>	A Project Manager assigned to the site appointed by the <i>Contractor Supplier Manager</i> .
<i>Employer's Engineering</i>	System Engineer appointed by the <i>Employer</i> on specific plant area.

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## 1.2 Contract Limits

The contractual limits are for the Online, Running, Outage Maintenance and Technical Support *Services* on Draught Plant Air Heaters.

The specific termination points are defined in the approved site addendum for each Power Station.

### 1.2.1 General Battery Limits

- a) From the Air Heater Gas inlet flange/compensator to the Air Heater Gas outlet flange/compensator – the limit is to be defined in the Site Addendum document.
- b) From the Air Heater Cold Air inlet flange/compensator to the Air Heater Hot Air outlet flange/compensator – the limit is to be defined in the Site Addendum document.
- c) Including auxiliaries (coolers, lube systems and vent fans as applicable).
- d) Including Main drive motor and gearbox Mechanical work.
- e) Excluding C&I and Electrical plant and associated components.

### 1.2.2 Participating Power Stations (Locations where service is required)

The Services are carried out at the following Coal Fired Power Stations in the respective clusters:

#### **Air Heater Cluster 2**

1. Camden Power Station
2. Duvha Power Station
3. Grootvlei Power Station
4. Kusile Power Station
5. Lethabo Power Station

## 1.3 Role players

The nature of the *service*, the range and location of Affected Property, and the manner in which the electricity power supply industry operates make it necessary to identify several role players for this contract.

### 1.3.1 *Employer's representatives*

The *Service Manager* may delegate the actions of him stated in this contract that are necessary for the setting up and administration of a Task Order.

The *Employer* shall in conjunction with the *Service Manager* appoint a *Site Service Manager* at each power station where work in this contract is to be undertaken. The station *Site Service Manager* shall be responsible to the *Service Manager* for all Task Orders issued by the power station he represents. The power of the *Site Service Manager* does not include the authority to alter or change the terms and conditions of the Contract. The *Site Service Manager* only has the power to change the conditions of the applicable addendum, in conjunction with the *Contractor*.

Duties of a general nature relating to the overall performance and administration of this contract will generally not be delegated by the *Service Manager*.

### 1.3.2 *Contractor's representatives*

The *Contractor* shall identify to the *Service Manager* one of his key persons as the overall contract administrator to be known as the *Contractor's Contract Administrator (CCA)*.

The *Contractor* shall appoint a representative at each power station where work in this contract is to be undertaken. The station representative shall be responsible to the CCA.

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## **1.4 Plant Description**

- a) The Description of Plant and Scope is defined in various key documents detailed below:

### **1.4.1 Plant information**

- a) The Description of Plant details the type and size of the affected plant covered in the Scope of Work document. The description of plant is detailed in **Attachment A** with the current available information and is not guaranteed to be correct or complete. The onus is on the contractor to verify any information on site if required.
- b) The information contained in the list is intended to provide the Tendering entity with some understanding of the plant size and configuration. Detailed Task Lists have been configured to contain the specific site activities to be carried out on each Coal Fired Power Station.

#### **1.4.1.1 Station Allocation**

- a) Eskom reserves the right to allocate different Stations to qualifying contractors. The final decisions will be based on Technical Security, Supplier Capability and Capacity to ensure that Maintenance Services are provided in a reliable, sustainable, controlled and qualitative manner.
- b) The Employer reserves the right to allocate Stations for the award of execution contracts in support of the long term goals and in line with the established risk management and Tender Evaluation Specification.

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## **1.5 *Employer’s Requirements for work to be performed by the Contractor (Service Work)***

### **1.5.1 Task Orders**

The *Site Service Manager* issues a Task Order to the *Contractor* which specifies clearly the work to be provided, additional specifications and procedures and any other constraints the *Contractor* complies with in providing the Works. The Task Order is issued before the *Contractor* Provides the Work.

Should resources additional to the base crew be required to complete the Task Order, the order includes the agreed forecast of the additional resources and the dates of completion

The *Site Service Manager* issues Task Orders to the *Contractor* in a timely manner that allows the *Contractor* to properly plan the work within the time periods stated on the *Task Order*

The *Site Service Manager* issues to the *Contractor* any information relative to the *Employer’s* need and circumstance surrounding forecast future work required from the *Contractor*. This information allows the *Contractor* to provide staff in a cost effective and efficient manner.

The *Contractor* performs work in accordance with the prior issue of a Task Order from the *Site Service Manager* or his delegate and completes it within the time period, and provision for delayed damages if applicable, and as agreed to between the parties.

The *Contractor* also performs plant maintenance work, work on related outages and operations work after the issue of a Task Order. If requested the *Contractor* also develops additional procedures applicable to the performance of designated tasks and submits the procedures to the *Site Service Manager* for acceptance. All works provided comply with the standard specifications, procedures and Site regulations, listed in the Works Information C3.1 Appendix A and the station Addenda.

Should the *Contractor* be unable to supply the resources required to complete a Task Order within the period specified, he immediately notifies the *Site Service Manager* to this effect. The notification includes recommendations as to how the work can be completed.

### **1.5.2 Emergency work**

Emergency work is work required when normal administration cannot be achieved and permits the *Contractor* to start work on a verbal instruction. The Task Order is confirmed in writing within 24 hours. If the Employer does not confirm the task order the Contractor shall confirm in writing the services that has been or to be completed. If the Employer does not respond within 3 days a task order is deemed to have been issued.

The *Contractor*, without the prior issue of a Task Order, but upon the verbal instruction of the *Site Service Manager*, Provides the Work in an emergency. This may entail the *Contractor* securing a sub-Contractor to carry out the work.

The Employer has the right to cancel breakdown work or emergency work after written instruction has been issued. The Employer carries proven Defined Cost incurred by the Contractor if cancelled after written instruction.

### **1.5.3 Service Information**

Each station’s detailed activity item scope is listed in Attachment C attached to the contract.

The *Services* envisage these minimum support services to improve plant and labour performance:

- a) Master planning
- b) Programming and scheduling

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- c) Project management
- d) Procedure and documentation writing and review
- e) Spares management
- f) Local Based Engineering support
- g) Operational and production process review

**1.5.4 Base crew requirements for Service**

The base crew generally performs assigned inspections, planned and corrective maintenance, including the inspection and maintenance of related capex and strategic spares stored as stock at Eskom stores, and supplies maintenance documentation as per the Task Order instruction from the Site *Service Manager*.

The base crew is agreed with each Power Station and is stated in a station addendum.

The contractor's base crew normal working hours are to (as closely as possible) match those of the Employer's maintenance department working hours (minimum 40 hours per week).

The base crew may be shared between the designated Power Stations, as mutually agreed between the Parties. Some stations may not have a base crew.

Where applicable, the *Contractor* maintains the agreed base crew for the designated Power Station. Changes to the base crew are negotiated with the Site *Service Manager* and must be approved by the *Service Manager*. A two month notice period will apply for an increase or reduction in base crew. All changes to be updated in Station Addendum and signed by *Service Manager* before implementation.

The base crew is supervised by the *Contractor*.

The base crew shall have all applicable hand tools required for the *Service* and shall be certified to work on the applicable Plant and Equipment.

The base crew is agreed with each Power Station and is stated in a station addendum. The number and mix of which may change from time to time with co-operation between the Parties.

A minimum of two persons on the permanent base crews, must be authorised Responsible Persons, to take out plant permits as per Eskom's Plant Safety Regulations, and such authorisation shall be obtained within four months of starting at any station, and maintained thereafter.

For all new appointments of Artisans and Supervisors shall be authorized Responsible Personnel, to take out plant permits as per Eskom's Plant Safety Regulations, and such authorisation shall be obtained within six (6) months of starting at any station and maintained thereafter.

The *Contractor* notifies the Site *Service Manager* at least two (2) weeks in advance of a requirement for an Artisan or Supervisor to attend a course or panel for the purposes of the *Employer's* Plant Safety Regulations. The *Employer* provides access to a course or panel within two (2) weeks of the request. If access cannot be provided within two (2) weeks, the time limitation of four (4) months is extended by the same amount of time by which the course or panel is delayed beyond the two (2) weeks' notice period.

For reauthorisation the *Contractor* notifies the Site *Service Manager* at least two (2) months in advance of a requirement for an Artisan or Supervisor to attend a course.

During major maintenance tasks, overhauls, outages and project specific work the base crew staff may manage and co-ordinate these major maintenance tasks, outages and project specific work. During this time the *Contractor* may replace the base crew staff to ensure continuation of routine maintenance.

During periods of lower work assignments, the Base Crew shall execute other work assignments e.g. plan future outages, review maintenance instructions, perform general maintenance, etc.

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

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The *Contractor's* employees may be required to sign an ethics and non-disclosure agreement prior to providing the Service required by this contract.

The *Contractor's* supervisor of the base crew will be required to perform at least, but not limited to, the following duties:

- Report on a daily basis to the relevant *Employer's Site Service Manager*, or Outage Controller during outages, as required.
- Daily, weekly, and monthly work/task planning and co-ordination.
- Make recommendations regarding spares and stock holding.
- Input into the Life Cycle planning process.
- Attend daily meetings.
- Liaise with the *Employer's* various groups other than maintenance (such as Engineering and Operating etc) with regard to identified potential problems, modifications etc, as required.
- Obtain authorisation as a Responsible Person, and Authorised Supervisor, in terms of Eskom's Plant Safety Regulations.

Overtime shall be approved by the *Service Manager* prior to the commencement of such overtime. For emergency work, where overtime is required, approval shall be given within 24 hours after giving the notification to work. The *Service Manager* or Supervisor (Outage Controller) is required to sign the *Contractor's* applicable time sheets upon completion of the overtime.

Overtime is assessed and invoiced monthly and is charged at a factor of 1.2524 times the hourly rate for normal overtime, and 1.3476 times the hourly rate for Sundays and Public Holidays.

The *Contractor* shall comply with all local and statutory labour laws (Labour Relations Act (LRA), Basic Conditions of Employment Act (BCEA), Unemployment Insurance Fund (UIF), MEIBC main agreement, etc.) and agreements and shall promptly attend to any labour grievances that may arise.

The base crew may be involved in the activities listed below in Base Crew (Routine maintenance) - Day to Day Tasks and Reporting

**1.5.4.1 Standby Services**

Where standby services are provided, such services shall be charged at a base rate of two hours per day per person, at the applicable person's hourly rate. Standby shall be assessed and invoiced monthly.

On call outs a charge will be levied for transportation. A minimum of two working hours will be charged for callouts at the appropriate rate.

The standby hourly rate should be 50% of the hourly rate (**i.e. Standby Rate = Hourly Rate x 50%**)

**1.5.5 Contractor's Functions for Service**

The *Contractor's* base crew Site Supervisor and Site Manager will be performing at least, the following duties:

**1.5.5.1 Site Manager Functions**

- a) Report on a daily basis to the relevant *Employer's* Site Service Manager or Outage Controller during outages, as required.
- b) Make recommendations regarding spares and existing stock holding (Spares management)
- c) Input into the Life Cycle planning process.
- d) Attend daily meetings.
- e) Liaise with the *Employer's* various groups other than maintenance (such as Engineering and Operating etc.) with regard to identified potential problems, modifications etc. as required.

**1.5.5.2 Supervisor Functions**

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- a) Daily, weekly, and monthly work/task planning and co-ordination.
- b) Obtain authorisation as a Responsible Person, and / or Authorised Supervisor, in terms of Eskom's Plant Safety Regulations.
- c) Plan and Coordinate plant breakdowns

Any administrative, supervisory, interface and managerial tasks not forming part of directly Supervising the work at the work face, is deemed to be the responsibility of the *Contractor's* Site Manager. Both Parties acknowledge the negative impact on Quality and Safety when removing the *Contractor's* Supervisor from his supervision tasks at the work face and agree to eliminate these detractions.

The maintenance services shall be charged at the rates reflected in the price list for the base crew.

The above items are agreed with the Employer's Site Service Manager and are stated on the addendum.

### 1.5.6 Outage Work

Menu activities from the Contract will be selected for the planned outage work and a Task Order issued accordingly, with scope of *Service*, start and end dates, and cost.

The use of the Menu Activity Schedule included in the contract is compulsory for both the *Employer* and *Contractor*.

The tasks, skills, and durations stated in the outage menus can be reviewed and re-negotiated annually, by the Power Station Service Manager.

### 1.5.7 Overheads

Variable site overhead cost for planned outages will be determined according to the duration of the planned tasks and the resources required to complete the work. The hours are not expected to exceed the agreed task menu time duration hours.

The *Contractor* may be required to undertake additional work on outages that will occur during the contract period that is not listed on the Task Order. This work will be done as per the Station Task Menu, and if no menu items are available the hourly rates may be used as per the agreed proposal or standard templates listed and agreed by the service manager. The Station Task Menu can be revised if the task is repetitive and must be added by the Employers Custodian of the Station Task Menu system.

Planned outages will be assessed and invoiced upon completion of the work.

The Power Station Task Menus are based on a 40 hour week, Monday to Friday, and do not include any overtime. If a 12 hour or 24 hour shift is required, then the prices and rates should be multiplied by the applicable factor below:

12 hour shift	1.23 (Day shift)
24 hour shift	1.30 (Two 12 hour day/night shifts)

The working hours during outages shall be dictated by the agreed hours on the task menu during relevant outage plan and priorities, and by mutual agreement with the Site *Service Manager* and approved by the Service Manager.

The total Overhead cost shall not be more than 50% of total SOW base cost.

The *Contractor* ensures that the following minimum outage crew is mobilized to the applicable power station site at least 2 business days before the start of the outage and 1 day post outage to perform the pre and post -outage requirements as stated in the Service Information:

- 1 x Site Manager
- 1 x QC Inspector
- 1 x Safety Officer
- 1 x Supervisor

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The following is the typically expected methodology on Overhead resource utilisation to minimise the costs

No.	Description/Designation	Expected Hours on Site	Maximum No of Resource	Expected Functions
1	Site Manager	Duration of Outage if not a roaming	1	
2	Supervisor(includes Welding Supervisor	Duration of Outage	1	
3	Artisan(Includes B-Class Welder, Fitter, Pipe Fitter)	As stipulated in Task Menu by contractor for duration of activity	As stipulated in Task Menu by contractor for duration of activity	
4	Assistant	As stipulated in Task Menu by contractor for duration of activity	As stipulated in Task Menu by contractor for duration of activity	
5	Specialised Welder	As stipulated in Task Menu by contractor for duration of activity	As stipulated in Task Menu by contractor for duration of activity	
6	Semi-Skilled(Includes Hoist Drivers, Fork lift Drivers and Crane Drivers)	As stipulated in Task Menu by contractor for duration of activity	As stipulated in Task Menu by contractor for duration of activity	
7	Clerk(Includes Time Clerk, Admin Clerk)/Storeman	For the duration of the agreed Outage time.	1	
9	Safety Officer	Duration of activity being performed	1 for first 50 Employees thereafter require permission from Service Manager to increase.	Consider using Safety Representative.
10	QC Inspector	1 <sup>st</sup> 3 Days of Outage and Last 3 days of Outage. As required during outage not on a permanent basis	1	
11	Rigger For Lifts below 5 Ton	Only for Duration of activity	1	Eskom riggers may not be used by the contractor
12	Hot Work Observer	Only for welding and grinding activity and limited to the duration of activity.	1	
13	Planner	Only for 2 hrs per day for duration of Outage.	1	
14	Engineer Design Engineer, Test Engineer	Special Request from Site service Manager	1	
15	Draughtsman	Special Request from Site service Manager	1	

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Any administrative, supervisory, interface and managerial tasks not forming part of directly supervising the work at the work face, is deemed to be the responsibility of the *Contractor's* Site Manager. Both Parties acknowledge the negative impact on Quality and Safety when removing the *Contractor's* Supervisor from his supervision tasks at the work face and agree to eliminate these detractors.

The *Contractor* shall comply with all local and statutory labour laws (Labour Relations Act (LRA), Basic Conditions of Employment Act (BCEA), Unemployment Insurance Fund (UIF), MEIBC main agreement, etc.) and agreements and shall promptly attend to any labour grievances that may arise.

If a time delay of more than 30 days occurs, or is expected to occur, between the *Contractor* completing his pre-commissioning scope of services, and the *Employer's* Unit returning to service, the *Employer* assesses the amount due as per NEC core clause 50.2.

**1.5.8 Working Area Overheads**

The cost of site establishment is minimised by using as much of the existing facilities and equipment as possible.

**1.5.9 Spares Management**

The *Contractor* recommends to the delegated Site *Service Manager* the optimal spares that should be carried at Eskom stores and includes:

- a) Spares required for maintenance and outages.
- b) The minimum recommended number of spares necessary in the case of emergencies.
- c) The serviceability of spares.

The Site Service Manager may request the Contractor to ensure that an accurate description of spare parts is maintained in the Employer's stores or spares lists, and the Contractor informs the Site Service Manager of changes.

The Contractor may be requested to support the Employer's personnel by providing cross sectional drawings and part numbers for stock identification and subject to the Employer's access control procedures, assists in checking stock holdings.

**1.5.10 Accommodation Options**

The power stations that have accommodation costs implications refer to Travelling & Accommodation Tables in the price list in C2.2 – Attachment D

The *Employer* does not supply accommodation and feeding facilities for the *Contractor*, the *Contractor's* employees or their families. On site canteens may be used by the *Contractor* at their own cost where applicable.

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### 1.5.11 Low Service Damages

This option is used where the contractor may not achieve the standards specified in the Service Information. In such cases the specified damages are payable by the contractor. The table below will be used in the assessment of the low service Damage.

Table 6: Service Level Table for Low Service Damages

No.	Description	Employer's Requirement	Damages payable by Contractor
1	Approval of safety file	Within 2 weeks of contract start date.	R500.00 per day without approved safety file.
2	Approval of Quality Management System	Within 2 weeks of contract start date.	R500.00 per day without approved quality file.
3	Authorisation of Supervisors	Within 1 months of contract start date.	R750.00 per day without an Authorised Supervisor.
4	Authorisation of Artisans	Within 2 weeks of contract start date.	R750.00 per day without an Authorised Artisan.
5	Arrival on site for call-out	Within 3 hours of call-out.	R1,000.00 per hour of delay or part thereof.
6	Non Attendance of meetings	Every listed meeting to be attended	R500.00 per incident.
7	Excessive Task Duration	Within the time specified by Contractor's plan as approved By the Employers Representative.	R500.00 per hour of extended Duration or 10% of the monthly contract value whichever value is lower

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Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
Service delays not finishing as per agreed upon project plan submitted and approved by the <i>Supply Manager</i>	1% per total value of the Task Order per day	Limited to 10% of the total value of the Specific Task Order.
No Submission of Quality control documents as per agreed upon Contract Document Submittal Schedule in this service/supply agreement.	1% per total value of the Task Order per day	Limited to 10% of the total value of the Task Order.
NCR raised on item defects are not corrected within agreed timeline.	5% per total value of the Task Order per day	Limited to 10% of the total value of the Task Order
Using Personnel/Subcontractor which are not Qualified/experienced as per the contract conditions	1% per total value of the Task Order per day	Limited to 10% of the total value of the Task Order

The following will form part of the performance evaluation

PSR Compliance/Authorisation		
MWH loss due to related plant		
PM compliance		
Submission of QC file		
Quality NCR incident raised		
Air Heater Leakage		
Safety		
Contractors DIIR		

#### 1.5.12 Duties of the Evaluation Team

The Evaluation Team assesses the results of the performance of the low Service Damages monthly and determines the applicable measures to be taken.

##### 1.5.12.1 The duties of the Evaluation Team are:

- a) Determine the Low performance
- b) Review plant performance
- c) Review productivity
- d) Monitor safety records and practices
- e) Review cost peculiarities

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## **1.6 Employer’s Technical Service Requirements**

### **1.6.1 Task Lists**

- a) Task Lists per Station – The Task list is used to describe the breakdown in activity schedule format, of the Scope of Work to be executed per Station. The Task List for each respective Station is detailed in **Attachment C**.
- b) The Tendering Entity must populate the Task List in terms of the offered manpower compliment and duration to complete each line-item of the Task List. The Task List is a ‘Work in progress’, reviewed with minor adjustments to suit best practice and clarity for each Station/Site, and forms part of each Station’s Addendum documents during execution.
- c) The electronic versions for the Task Lists are available on request, and the response must be submitted in hard-copy format as well as per original issued electronic Microsoft Excel work sheet, with all the applicable fill-in data (e.g. rates and skill sets etc.) shown.
- d) The Tendering Entity is not allowed to modify the lists as provided by the Employer. If the Tenderer deems there are new items to be added to the list a blank template will be provided on request. Please note that certain columns are password protected and only the relevant columns can be completed.
- e) No exclusions are allowed to be listed in the completed Task List. Any exclusions need to be submitted in a separate spreadsheet.

### **1.6.2 Task Lists for TES evaluation**

- a) Task Lists required for the Tender Evaluation Technical document submissions – The Typical GO specific Task List is used to compile the requested technical documentation, and contains typical activities that would be executed during a typical GO outage. The applicable Typical GO scope Task List is detailed in **Attachment H**.

### **1.6.3 Skills Lists**

- a) The contract makes provision for the Tendering entity to offer hourly Rates per Skill type. The required skill-types are defined in **Attachment D**.
- b) The Skills are divided into 2 basic groups:
  - 1. Skill-sets required for the execution of each specific task in the Task List, The rates for these skills are utilised to calculate “price” for each individual Task List item.
  - 2. Skills required for execution of the Task (or Outage) as a whole, which are not linked to each individual task but are costed as Task Overheads. Skills required on an as and when needed basis also form part of this grouping.
- c) The Rates offered for each Skill type is to be inclusive of several aspects of the Service required to execute the Task (or Outage). The definition of inclusive services is defined in the Works Information below.

### **1.6.4 Station Outage Philosophy**

- a) Each of the Eskom Generation Stations has an Outage Philosophy, establishing what the ‘philosophy’ outage planning schedule and duration is. The information is available on request to facilitate Tendering entities with the Scope of Work volume assessment.
- b) A typical example of the schedule is attached in **Attachment E**

### **1.6.5 Generation Outage Plan**

- a) The Eskom Generation Outage Scheduling Plan is available, and updated on a weekly basis. The information is available on request to facilitate Tendering entities with the Scope of Work volume assessment.
- b) A typical example of the schedule is attached in **Attachment F**

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**1.6.6 Engineering Support**

- a) Engineering support is the provision of Local Based Engineering Technical support from the Contractor into:
1. the Contractor's own internal processes,
  2. the Contractor's own site personnel
  3. the Employer's System Engineers.
- b) The provision of Engineering Service is inclusive in the tendered skills hourly manpower rates.
- c) The extent of Engineering support is pinned on a maximum of 40 working hours per station per month, on an as-and-when required basis.
- d) Most of the elements for support, as defined in the works information is based on Outage Planning and Outage Support, integrated with bi-monthly planning/solution sessions with Engineering meetings.
- e) The attendance to unplanned events is coordinated with Site Engineering.
- f) Scheduled interventions with the Employer Engineering is included and is pre-arranged in the form of scheduled Engineering issues meetings, and System Engineer Liaison meetings.
- g) All Site support/interventions are pre-arranged, and confirmed telephonically or by email. The need for formal logging of hours is not required, unless general problems are experienced with abuse or over-expenditure, which will be raised with the respective Contracts Managers.
- h) Engineering travel costs to Sites in request from the Employer's Engineer is similarly based on the inclusive principle and therefore not charged separately.
- i) The *Contractor* submits the actual Engineering Support hours used to the *Employer* on a yearly basis detailing the hours per month per station that was actually used under the 40 hours included in the contract and any additional hours used not covered by the contract terms by the stations.

**1.6.6.1 “Head Office” Engineering support to provide the typical OEM engineering functions, which does not form part of the Maintenance Engineering support.**

- a) Recommendations for head-office refurbishments of plant components.
- b) Compilation and issue of repair procedures.
- c) Maintain OEM engineering drawings and specifications (including configuration changes).
- d) Development and standardized implementation of daily and outage Inspection, repair and maintenance procedures and check sheets.
- e) Support for Spares planning and recommendations for contractor site teams.
- f) Generating and issue of dedicated General Assembly & Sectional Assembly drawings suitable for the ‘purchase referencing’ of Maintenance spares parts.
- g) Drawing office time linked to the maintenance of general layout, sectional assembly drawings, obsolescence and standard repair of components.
- h) Access to design principle technology and support.
- i) Use of in-house and design principle licensed Air Heater software on existing equipment.

**1.6.6.2 Additional Engineering support to the Employer (as and when required up to 40hrs per site per month) including the following supporting activities:**

- a) Support of Employer Engineering meetings for review of technology, incidents and Specifications.
- b) Ad-hoc telephonic technical support to Station System Engineers, including the supply of OEM technical maintenance information to Eskom Engineers, ie. specific clearances, settings and sizes.

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- c) Attendance of Engineering meetings on site in order to propose plant modifications, discuss life cycle costs, post mortems, UCLF discussion and closing out of NCR's – 2 monthly Engineering progress forum per site.
- d) Proposals for Plant modifications to recommend enhancements for life cycle cost benefit, reliability and obsolescence.
- e) Outage Scope evaluation and recommendations to System Engineers on request.
- f) Support/Input to the pre-planning of spares (complete manufactured and off the shelf Bill of Material) requirements for outages with recommendations to be submitted within 2 weeks from submission of Engineering Scope of Work.
- g) On-site technical evaluation of components during outages & assisting Outage Management and Engineering in compiling Outage Scope of Work, including evaluation of NDT reports, complete with defect assessment and recommendations for reliable operation.
- h) Measurement and analysis of Air Heater element wear with report of remaining estimated element life and replacement recommendations.
- i) Trending of wear related condition of applicable plant components such as Air Heater elements.
- j) Support to Site teams for the compiling of engineering specifications for bought-out spares.
- k) Participation in close-out of outage activities with focus on Engineering issues.
- l) Compiling of detailed Repair Procedures for Fan repairs on site & in *Contractor's* works. Major fault finding and incident investigations with recommendations (including incident vibration analysis – 1 shift per event).
- m) Recommendations to Engineers of best practices for plant Operation and Maintenance.
- n) Annual review and Input into the Employers Technical Life of Plant Plan (LOPP) and long term technical plan (Lifex).
- o) Annual one-day training session for Employer's Draught Plant Engineers in accordance to Site and Engineering management requests

**1.6.6.3 Engineering tasks not included in the contract inclusive costing structure. These services may be charged on a per-case rates basis**

- a) Finite element and computational flow models.
- b) Site Performance testing of Air Heaters.
- c) Leakage tests of Air Heaters (O2 measurement).
- d) Finite element analysis (FEA) incl. dynamic modal prediction as may be necessary.
- e) Feasibility studies.
- f) Drawing office time linked to client requested plant modifications to non-OEM equipment.
- g) Placement of a Site System Engineer.

**1.6.7 Training**

The *Contractor* trains the *Employer's* staff in technical maintenance requirements for the Works if required

**The provision of maintenance services and technical support on Regenerative Air Heaters for participating Power Stations on an “as and when required” basis for a period of 5 (five) years****1.7 Additional Contract Costing Requirements****1.7.1 General Requirements**

- a) The Contractor shall provide and maintain all Standard tools, required for execution of the Scope of Work. Standard tools are defined as the Fitters toolbox equipped with the tools required for the execution of site-specific and product-specific tasks.
- b) The Contractor shall provide and maintain all Special tools required for the execution of the Scope of Work. Special tools are defined as additional hand-tools required for the execution of tasks defined in the Task Lists and defined in the execution procedures. Typical Special tools such as the following (and not limited to) are included in this requirement:
  - 1. Basic rigging equipment, inclusive of slings, jacks and rigging turfors, up to a capacity of 100 ton
  - 2. Equipment required for effective element pack changes in accordance to the relevant station's maintenance manuals.
  - 3. Electric hand tools of various types, including welding machines.
  - 4. Lighting and electrical reticulation equipment, such as temporary electrical power distribution boxes and extension leads.
  - 5. Oil drainage and filtration equipment.
  - 6. Special stripping and assembly tools, required for the execution of the stipulated Scope.
  - 7. Quality and condition verification measuring tools Inclusive of manual vibration checking and wear thickness measurements.
- c) The Contractor shall provide all consumables required for the execution of the Tasks as defined in the Task Lists and day to day activities of the routine Maintenance crews. Consumables are generally defined as items that become “part of the job”, and items that are available in bulk quantity, used and controlled by the Contractor's personnel. Items such as gaskets or sealing rope are considered as spare parts and are thus excluded. Typical Consumables such as the following (and not limited to) are included in this requirement:
  - 1. Cleaning materials such as rags and de-greaser.
  - 2. Material finishing items such as wire brushes and grinding media.
  - 3. Welding consumables.
  - 4. Tube and can contained sealants, adhesives and lubricants (for strip/assembly functions), etc.
  - 5. Office equipment
- d) The Contractor shall provide Local Based Engineering Technical Support for Maintenance Components, as defined in the Technical Works Information, inclusive to the tendered Rates in the contract. The allowance for Site support to Eskom System Engineers is based on an average of 40 hours per site per month.
- e) The Contractor shall provide the basic support for project planning and progress monitoring, in the form of a detailed activity program and progress reporting on a 2 times per week basis.
- f) The Contractor shall ensure that the deployed execution team is correctly skilled and trained on Product Specific procedures, and the costs related to the training of it's personnel as defined in the Training requirements of the Technical Works Information is inclusive in the offered contract rates.

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- g) The Contractor shall provide office equipment and miscellaneous consumables required for the contractor's permanent or Outage site office.
- h) Temporary Site offices shall be provided by the Contractor and placed and constructed as per site requirements.
- i) The site (location premises) shall be provided free of charge, with basic services for the supply of water, electricity and sewage. If office space is not available, the contractor will be required to provide temporary settlement offices on the allocated site/area.
- j) The Contractor is required to provide permanent service personnel (Core crews, or Routine maintenance crews) to sites associated to each specific contract/cluster. Not all sites require the establishment of Core crews, and requirements may change. Sites currently with the Employers own on-site personnel is Lethabo, Matla and Tutuka.
- k) The contractor is required to provide Emergency and Outage execution personnel as and when required for the defined Scope of Work in the Task Lists. The outage Scope and frequency planning is detailed in this document. The contractor should be aware that during the execution of the contract, some Stations/Boilers may be removed from service.
- l) Cost for transport and accommodation is to be offered at rates in the attached rates table.
- m) Only Eskom respective site appointed and approved NDT (abbreviation to be defined) contractors may be used to provide NDT services.
- n) The preparation of Fan impellers for NDT may require the pre-cleaning by means of grit-blasting. The provision of this bought-out facility is offered by the Contractor and non-exclusive at an agreed handling rate.
- o) The Contractor shall populate and return-submit the completed Outage Task List per Station in accordance to the provided format. The Contractor is to submit additional information to support and clarify the definition of each listed task (if required). For planned outages (Refer to the Outage PCM), and following the tabling of the planned T-6 (6 months before) Scope Of Work by the Employer/Engineer, the Contractor (Contracts & Spares Planning Engineers) is required to attend a Scope Clarification meeting.

**1.7.2 Non-exclusive Scope**

- a) The provision of NDT services
- b) The provision of grit-blasting services
- c) The provision of high pressure washing services

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- a) Routine maintenance work is the execution of on-line plant inspection and maintenance work as per plant philosophy and stipulated in inspection sheets.
- b) Routine Maintenance work includes the provision and maintenance of:
1. Core crews which shall be based on site but may service more than one site. Site crews may not be required for all stations and will be detailed in the site addendum document.
  2. Routine Daily on-line plant Inspections as per maintenance strategy. Plant monitoring record sheets shall prompt for critical inspection points and record important process values.
  3. The inspection findings shall be reported to the Maintenance Supervisor on daily basis, and critical findings (which may result in a load loss) shall also be reported directly to the System Engineer.
  4. A copy of the inspection reports with summarized recommendations shall be submitted on weekly basis for the attention of the System Engineer.
  5. Routine Daily on-line plant servicing as per the Station maintenance strategy.
  6. Plant component condition and performance monitoring.
  7. Plant trouble shooting and problem solving.
  8. Reporting of plant defects which shall be captured and submitted to the Employer's representative. Execution and feedback on defect notifications shall be tracked by the Contractor.
  9. Plant checks and plant stand-by making for return to service requirements.
  10. Stand-by availability in case of emergency call out for maintenance repairs.
  11. Emergency repair of plant that can be started/executed within the available site staff compliment.
  12. Task execution input like procedure, program, spares planning, and submission of execution QCP. (QCP only applicable for breakdown activities).
  13. Plant-on-load inspection and compile relevant input for outage scope of work.
  14. Sensitive corrective or preventative maintenance that is best performed during plant shutdowns and outages.
  15. Post outage activities – Commissioning of plant after shutdowns, including verification of final setting-up of plant (i.e. lube pressures/flows, on-line seal setting, etc.).
  16. Coordinate NDT tasks with approved NDT contractors, when tasks are executed outside of the normal Outage schedule.
  17. Cleaning of mechanical plant, such as lube systems and bearings related to draught plant and cleaning up of spillage in activity areas as per Plant Safety Regulations.
  18. Spares planning for maintenance and future outages including spares lists updates, control and receiving inspection of spares and control of repairable spares.
  19. Stored spares preservation maintenance.
  20. Attend site meetings as required by each site.
  21. Task execution input such as procedures and submission of QCP's applicable to breakdown activities.
  22. Provision of Responsible Personnel (in accordance to site addendum), to Arrange/Manage work execution in accordance to the Site Plant Safety Regulations.
  23. Three-monthly verification shall be done for Artisan and Semi-skilled toolbox content/completeness, and a formally submitted report to the data-file.

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- a) Outage work is the execution of Outage Scopes of Work as per the Employers Station and Outage philosophy, which are detailed in the Task Lists.
- b) The requirements for the execution of Outages are detailed in the outage PCM and Scope of Work is also described in each Station's Plant Maintenance strategy document for the applicable Plant.

**1.8.2.1 Outage Maintenance Work Activities**

- a) Pre-planning of outage work.
- b) Key personnel attendance of Station Outage pre-planning and progress meetings.
- c) Spares planning including spares lists. The requirements for spares planning is stipulated in the Works Information.
- d) Submission of a detailed execution program at T-2 months prior to outage start and progress updating daily during outages.
- e) Execution of Outage Inspections (inspection reports, recommendations, Quality Control, etc.).
- f) Execution of plant outage maintenance and repairs in accordance to approved procedures., including replacement of air heater elements when required.
- g) Re-commissioning of plant after completion of maintenance/repairs.
- h) Quality Control, reporting and co-ordination.
- i) Coordinate critical NDT tasks with approved NDT contractors.
- j) Compiling, submission and storage of records concerning repairs and replacements. (Outage data-book).
- k) Preparation and close out of outage activities in a post mortem meeting.
- l) On load post outage activities (plant adjustments, optimisation and setting verification).
- m) The Contractor is required to augment the submitted SOW, and provide documented supporting recommendations to the Employer (Outage Coordinator & System Engineer) for consideration, which is followed by the tabling of two key planning documents:
  - 1. A clear SOW Task Order that is aligned with the submitted Engineering SOW, issued by the Employer.
  - 2. A complete spares requirements list based on the Employers spares lists, incorporating manufactured items, and off-the-shelf purchases like bearings, gaskets, bolts & nuts, and consumables to be used for execution of the works, as compiled from the meeting and issued by the Contractor.
- n) The Contractor shall submit an official report of pre-shutdown conditions, covering plant condition such as known defects, lube system operating deviations, soot-blower operation, seal setting records, damper gland leakage, etc. for the above T-6 meeting.
- o) Upon the issue of the Shut-down SOW Task order, the Contractor shall submit a Quality Control Plan to the Employer's Coordinator for Engineering assessment and approval at least 30 days before the Outage scheduled date. All QCP's to be tabled shall be reviewed and approved by the Contractor's Service department QC Manager, prior to submission to the Employer. Refer to Quality requirements for the stipulations regarding QCP's in the Works Information below.

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- p) The Contractor shall submit a formal scaffold requirements list, synchronized with the inspection program, to ensure that the SOW inspection is executed in full, at least 30 days prior to the start of the applicable Unit shut down.
- q) The Contractor shall submit complete Outage (Plant shut-down and isolated) inspection check sheets for assessment and approval by the Employers Engineering team. The Station specific record sheets shall provide for the recording of all visible and measured parameters required to establish the plant condition and Scope of Work. The content of the inspection documents are subject to the requirements stipulated in the referenced Maintenance Standards for Air Heaters.
- r) The inspection and documents shall be laid-out in three categories:
1. Inspection of all visually accessible components and incorporating the opening of doors and the removal of guards/covers. This inspection results is reported on a dedicated inspection list, with prompts to consider each applicable plant component/ section. This report is issued to the Employer System Engineer for provisional assessment of variations to the Scope of Work.
  2. Inspection of accessible components (without stripping) by means of dimensional assessment and reporting on the applicable components. This report is compiled and issued within 4 days after access permits has been issued to the Employer System Engineer for finalization of the assessment of variations to the initial Scope of Work.
  3. Extended intrusive Inspection of remaining items which requires partial stripping of plant. These items are normally covered in the stipulated Scope of Work, and the final assessment of these items is decided upon the opening and reporting of the stripped condition.
    - i. Support bearing and shaft journal condition
    - ii. Locating bearing and shaft journal condition
    - iii. Soot-blower thermal compensator condition
    - iv. Soot-blower indexer valve stripped condition with evaluation of the spool condition
    - v. Main drive gearbox internal assessment (if required)
- s) The witnessed visual inspection report (documented defects list) is a visual reporting of wear or abnormal condition. The report is not intended to be a replication of stated Scope of Work.
- t) The dimensional inspection report (documented condition reporting sheets) is a dimensional indication of the condition of individual components in order to facilitate the assessment and extent of required repairs/replacements.
- u) At the completion of the initial SOW inspection, the contractor shall submit an Engineering evaluated report (on deviations from the norm) to the Station System Engineer with recommended repair actions and a reviewed recommended replacement spares listing, at least 24 hours prior to the facilitation of the SOW Rev 1 meeting. The report-document format must be indexed, controlled, and complete and content agreed with the Employer's Engineer. The content of the items covered in the report is detailed in the section stipulating the documentation requirements below.
- v) The submission of the inspection sheets shall be accompanied with analysis and Engineering recommendation (where applicable) to formulate the recommended outage SOW.
- w) The SOW recommendation shall be finalized in a co-ordination meeting with the Employers Outage coordinator and System Engineer together with key personnel from the Contractor (Co-coordinator, Engineer, and applicable Plant Supervisor), and upon final scope agreement, A joint (agreed) Task Order shall be tabled, and after which the Contractor submit an addendum to the Quality Control Plan, Program and an updated Spares requirements list.

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- x) The inspection results from further progression with stripping of plant shall be added to the initial SOW report, as and when available, and shall be dealt with by the revision of the key documents – SOW task order, QCP, Program and Spares list if required.
- y) The Contractor shall have detailed documented Plant Repair Procedures – subject for review and acceptance by the Employers Engineering specialist personnel. Procedures shall be specific in the stipulation of required norms, wear limits, settings and tolerances, etc., in order to guide repair/installation personnel as well as Quality personnel. The information required to perform acceptance/final inspections shall be clearly documented.
- z) Detailed post-work Testing and Re-commissioning procedures must be available and are subject to the Employer's Engineering specialist review and acceptance.
- aa) The Contractor shall perform post outage (Plant in Service), optimisation of settings such as Seal setting optimisation, Lube system setting and issue a formal finding, action and setting report to Engineering. These activities may also be assigned to the on-site Routine crew.
- bb) Completion of Outage work shall be supported and concluded with an arranged Post-mortem meeting to be held within six weeks from completion of the works. The following requirements apply:
  - 1. The meeting is arranged and coordinated and documented by the Employer's Outage coordinator.
  - 2. The meeting minutes shall make provision for specific action and close-out of all issues within a period of two months.
  - 3. The Contractor prepares documentation and actions as stipulated in the detailed document requirements stipulated in the Works Information below.
- cc) Upon conclusion of the Outage work, and within 30 days from the completion of work and before the Post-mortem meeting, the Contractor shall submit the documented Data Book in accordance to the requirements stipulated in the Works Information below.
- dd) Pre-outage and monthly verification shall be done for Artisan and Semi-skilled toolbox content/completeness, and a formally submitted report to the data-file.

## **1.9 Quality Requirements**

### **1.9.1 General**

- a) The *Contractor* must comply with valid ISO 9001 Quality Certification throughout the contract period as well as the Employer quality requirements detailed in 240-105658000: Supplier quality management: specification. The Contractor must also submit a valid ISO 9001 Quality Certificate during the tendering process.
- b) Weld repairs to Air Heaters will be carried out to the Eskom standard 240-106628253 “Standard for Welding Requirements on Eskom Plant”, which will be complied with unless there is a justifiable technical reason motivated why it cannot be used.
- c) Regenerative Air Pre Heaters are classified as Level 1 equipment and the *Contractor* must comply with valid ISO 3834 Part 2 certification throughout the contract period. The Contractor must also submit a valid ISO 3834 Part 2 Certificate during the tendering process.

### **1.9.2 Quality Control Plans**

#### **1.9.2.1 General Requirements**

- a) The QCP shall be an engineered document prompting for critical inspections by appointed inspectors for monitoring the execution of work quality.

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- b) The Quality Control Plan shall make provision for the recording and review of critical activities, problem/sensitive areas, safety risks, and reference the Norms required for the execution of each task.
- c) The original submission of the QCP for approval must incorporate the related referenced inspection check sheets and inspection norms.
- d) Repairs executed by Routine Maintenance crews or unplanned shut-down crews, shall be subject to the same Inspection and Quality Control requirements as for Outages, within the realistic time frames of emergency shut-downs. These fast track events would require the prepared QCP i.e. for a failed bearing, content already agreed with Employer's engineer/maintenance and the Contractor's Supervisor simply issues the QCP to the client for on the spot approval. Execution of QCP interventions are managed by the respective Employer/Contractors supervisors by means of Telephonic arrangements or via WhatsApp.
- e) For short notice shutdowns/repairs, the QC documents should be submitted for approval prior to the start of work. Refer to Quality requirements for the stipulations regarding QCP's.

**1.9.2.2 Requirements for QCP Compilation**

- a) The QCP's are created with the individual Station Task List as a basis.
- b) A detailed accurate SOW provides the input to formulating an accurate QCP.
- c) The QCP is not a duplication of the SOW but provides the essential plan for Quality interventions – What to be inspected, evaluation criteria and by whom the inspection will be witnessed.
- d) A single Scope item may require several witnesses during execution (e.g. opening, stripping, cleaning, inspecting, replacing components and final inspection before closing for a white metal bearing).
- e) A Mechanical QCP will contain the following essential information in heading:
  - Date Created.
  - The Station Name.
  - Unit number.
  - Component position (LH or RH).
  - Description of the Equipment.
  - Unique QCP number.
  - Inspection code (type of witness, e.g. Visual)
- f) A revision to the QCP due to added/revised Scope of Work may be added to the QCP by means of addendum pages.
- g) The use of sequential item and page numbering is required.
- h) A single document approval-block on the final page is the minimum requirement.

**1.9.2.3 Requirements for QCP Content**

- a) The QCP's are created with the same resemblance to the Scope of Work headings and sequence – a reference column to the Scope item number is good practice.
- b) The flow of the sequence in which work is executed should be retained.
- c) The use of a Pre-Job Brief (PJB) activity for the Contractors planning and execution is considered good practice. The PJB is shown on the Activity group heading for Hold execution).
- d) Scope activities that do not require a QC intervention is not listed on the Plan (e.g. Open doors).
- e) Scope activities involving the “closing up” of an item (meaning no further witness of the internal condition is possible) shall always be a Witness Hold intervention.

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- f) Scope activities that do require quality interventions will be described with consideration of WHAT must be inspected/witnessed and with exact reference to the guiding document (e.g. Evaluate the condition of the stripped bearing components, reported sizes and recommendation).
- g) The method of consolidating small inspection points into one witness (with associated check list, is considered desired practice.
- h) All final inspections (before closing doors) shall be guided by a documented check sheet and signed-off by relevant delegated persons stipulated on the QCP. Check sheets shall cover typical items such as cleanliness, scaffold removal, door seals & latches, bolts fitted, final set-up measurement reports compiled, pinion & gearbox settings, commissioning executed, and doors closure.
- i) All QCP inspection items will be populated with the required levels of intervention (e.g. Surveillance, Witness, Hold, Review), before approval of the document.
- j) The Employer may request the Contractor for the inclusion of it's indicated intervention requirements for future issuing of the QCP.

**1.9.3 Requirements for QCP Execution**

- a) The Contractor's QC function and/or the Employer's witness is informed at least 1 day before the planned execution of inspection, and the time for the intervention is firmed up at least 2 hours before execution of the intervention. The information for the planned intervention is recorded in writing.
- b) Documents, specifications and check lists referenced for the intervention will be available during the execution of the intervention.
- c) The intervention will be signed-off upon completion of the intervention with the applicable date recorded.

**The provision of maintenance services and technical support on Regenerative Air Heaters for participating Power Stations on an “as and when required” basis for a period of 5 (five) years****1.10 General Service Execution Standards****1.10.1 Bolting Arrangement**

- a) The size and grade of replacement bolts & washers shall be in accordance to drawing standards. The contractor is to take care with Quality Inspection documents for detecting bolts different from the standard grade, or specification.
- b) Flame cutting for the removal of bolts on Bearings, Impeller Rotors, Pedestals, Bases, Soot-blower Compensators, Soot-blower Flange Components, and Collar seals is only permitted after approval by Site Engineering. The Contractor Supervisor shall take the utmost care that personnel have been adequately trained not to damage base components with flame cutting.
- c) No unauthorized welding or weld build-up in an effort to repair components is allowed.
- d) Where bolt tightening has been specified, the execution shall be accompanied with a torque check sheet and Witness record.
- e) Previously used/removed bolts to be re-used shall be properly binned per application and retained in a clean and dry environment until re-fitting.
- f) Foundation and bearing pedestal bolt arrangement shall be monitored by controlled torques, thus continuous tightening/testing by means of uncontrolled flogging is not permitted (unless physical access prevents the use of a torque wrench, permission to be obtained from the Employer's site representative after agreement with the Employer's Engineering).

**1.10.2 Flanged Joints**

- a) Gaskets shall be correctly sized in order to centralize the gasket between the flange bolts on the sealing landings.
- b) The contractor shall always verify that fitted gaskets are correctly specified for the applicable process parameters.
- c) Quality measures shall be implemented to ensure that the correct bolts for the application is used, and that joints are parallel bolted.
- d) All flange gaskets are to be made part of the spares list – on-site cutting of gasket material is to be eliminated.

**1.10.3 Lubrication Systems**

- a) Transferring of lubrication system oil – to facilitate internal tank cleaning/servicing – shall be done via a pumped and filtered system with minimum 25 micron (nominal) filtration quality.
- b) Storage containers shall be cleaned before use, ensuring NO remnant dirt or alternative oil is present.
- c) Any extensive tank and oil supply pipe intrusive work shall be followed with bypass flushing before passing oil through bearings. The contractor shall provide the appropriate flushing connections.
- d) Passing of oil through bearings shall require the prior completion of all intrusive/replacement work on the oil supply system.
- e) Lube tank internal condition shall be thoroughly inspected and reported for settled dirt and corrosion.
- f) The re-starting of lube system pumps shall be witnessed and monitored for leaks.
- g) Setting-up of control & pressure relief and valves shall be executed with an approved guiding procedure.

**1.10.4 Sleeve Bearings**

- a) Standard practice regarding proper cleaning of the component and working area shall be observed before stripping a bearing.

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- b) The execution of any bearing work shall be supported with extensive effort to screen off the working area against ash/dirt ingress during the ‘cleaning and close’ period.
- c) Sleeve bearings shall be thoroughly cleaned, oiled and oil ports purged prior to installation.
- d) The opening of a sleeve bearing is to be included as a witness point on the QCP for the Contractor and Employer appointed QC, and the general condition or failure mode analysed & reported.
- e) Serial numbers of sleeve bearings are to be recorded onto the inspection records.
- f) All serviced or installed bearings and associated oil rings, and seals shall be included on the QCP for the Contractor and Employer appointed QC and measured clearance verified, immediately before replacing the top housing/cover.
- g) All gaskets and split surfaces shall be sealed with a non-hardening sealant (e.g. Hylomar).
- h) Unauthorized scraping of bearings is not permitted without the explicit instruction from Engineering.
- i) The bearing servicer shall be responsible to ensure that the removal and installation of instruments is coordinated, and that all open holes are blanked-off during the service period.
- j) For motors with sleeve bearings, the bearing servicer shall be responsible to verify and maintain the internal housing spherical insulation and earth wire connection (where applicable).
- k) Bearings are to be manually lubricated for turning if an operational lube-system is not available.

**1.10.5 Open Lube Piping**

- a) Any opened piping or vessel shall be screened off for prevention of dirt ingress.
- b) The contractor will ensure that open holes for piping or instrumentation is closed/blanked off to prevent dirt ingress on serviced bearings/components.

**1.10.6 Stripping of Plant**

- a) Any plant to be opened (stripped) shall be thoroughly CLEANED prior to exposing sensitive internals.
- b) Particular caution and control is to be applied with bearing oil top-up to secure the cleanliness of plant & oil and the filling operation.
- c) Applicable match marking (where appropriate) shall be applied.
- d) Stripped components shall be safely marked and stored.

**The provision of maintenance services and technical support on Regenerative Air Heaters for participating Power Stations on an “as and when required” basis for a period of 5 (five) years****1.10.7 Air Heater Soot-blower System**

- a) During work in execution, all open pipes and valves shall be adequately screened/blanked off to prevent ingress of dirt, debris, or other components.
- b) The soot-blower system nozzles on the Cold-End of the Air Heater shall be screened-off to prevent ingress of dirt/water during Element Pack washing.
- c) Rotating connections (like piston type compensators) shall be checked for concentric installation & linear alignment and results recorded.
- d) For the installation of In-line compensators, the alignment of piping shall be proven prior to compensator installation.
- e) Flanged connections shall be inspected for correct parallel alignment, gasket alignment and correct bolt tensioning.

**1.10.8 Air Heater Seal Setting**

- a) Setting shall be accompanied with an Engineering approved schedule, and the Employer shall be consulted/informed of all recommended changes to the setting schedule.
- b) When seal setting is concluded, a final setting report shall be compiled and recorded in the data-file.
- c) For Rotating Hood Air Heaters, hot setting evaluation shall be conducted by the Contractor Engineering while considering leakage and plant process parameters, and the input loop to the seal-setting schedule concluded.

**1.11 For Rotating Matrix Air Heaters, the fitting of copper pins after setting is required in order to evaluate & review effective sealing/setting, if leakages are considered to be a problem. Air Heater Type Specific Execution Standards****1.11.1 General**

- a) Due to the extensive complexity inherent to the design of the Rotating hood-type Air Heaters, the Standard for the different types are separated.
- b) The Standard stipulates the frequency and requirements for visual inspection, measured inspection, expected component life and replacements.
- c) The Standard provides a guideline to the extent of attention to detail that is required for installation, repairs and quality monitoring in order to prevent repetitive & unexpected failures of components.
- d) The Standard is applicable for Employer Engineers and Contractor compliance.

**1.11.2 Rotating Hood Specification**

- a) As noted above, the Standard documents the Inspection, maintenance and quality requirements for the execution of maintenance on Rotating hood air Heaters.
- b) The extensive details dictated inherent to the design of the machine requires an intensive self-evaluation by the Contractor to ensure compliance to the requirements.
- c) The Employer will require access to all procedures and systems in order to verify compliance.
- d) The Standards are contained in document 474-12328 Specification for Rotating Hood Air Heater Maintenance Execution

**1.11.3 Rotating Matrix Specification**

- a) As above, the Standard documents the Inspection, maintenance and quality requirements for Rotating Matrix air Heaters.
- b) The Standards are contained in document 474-12324 Specification for Rotating Matrix Air Heater Maintenance Execution

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- c) As above, the Standard documents the Inspection, maintenance and quality requirements for Rotating Matrix air Heaters.
- d) The Standards are contained in document 474-12325 Specification for Quad Sector Air Heater Maintenance Execution

**1.12 Handling and Repairs of Spares**

- a) The Contractor Execution team shall ensure that Components fitted, comply with known norms – components with fitting or matching problems shall be reported to the Supervisor and QC inspector for formal reporting via the Defect Notification system for correction. Site changes to components shall not be made without the written approval by the Employers Engineering.
- b) Required drawing changes or deviation from drawings shall be reported to Engineering (Contractor and Employer) for the correct processing/updating of documents.
- c) Repairable replacement components (removed from plant), shall be marked and dispatched to a safe holding area, and tagged, listed/reported to the outage Controller via official report, latest at the Outage post-mortem meeting.
- d) Repairable components shall be treated as valuable re-usable components and handled/transferred with appropriate packaging, thus additional damage through handling is not tolerated.
- e) In-situ repairs of components shall be accompanied by a written procedure/guide to ensure both Supervision and Quality personnel can evaluate the repair status for correctness and reliability.
- f) All abnormal component failures (pre-mature and uncommon) shall be reported, analysed and a corrective action report issued by the Contractor Engineer.

**1.13 Inspection documentation**

- a) The inspection of the erosion and protection condition for Air Heaters shall be accompanied by a complete evaluation plan and installation guiding drawings for materials planning and correct installation.
- b) Provision shall be made in procedures and quality documentation for the testing and commissioning of lubrication systems, fire-fighting system and soot-blower control equipment set-up.
- c) Particular attention (and proof of Quality Control) shall be given to the correct configuration of Cast Iron Wear Seal installation, fixing points, sealing on seal frames, articulation gaps and seal frame movement control, sector plate adjustments & seals.
- d) All final settings (after completion of work) and inspections (such as pin-rack & pinion set-ups, controlled gaps & thicknesses, seal settings, and compensator concentric installations) shall be recorded and included into the data-file.

**The provision of maintenance services and technical support on Regenerative Air Heaters for participating Power Stations on an “as and when required” basis for a period of 5 (five) years****1.14 Contract Documentation****1.14.1 Site specific documentation**

- a) Site-specific requirements and details will be defined in a Site Contract Addendum document. The document will include plant description and contract guidance for requirements such as:
1. Appointed responsible persons,
  2. Required Staff compliment,
  3. Site establishment requirements,
  4. Definition of Plant and Scope of Work,
  5. Service work Task Lists,
  6. Spares Lists,
  7. Specific Site requirements,
  8. Official Site list of meetings to attend.

**1.14.2 On Line Inspection Reports**

- a) The Contractor shall submit complete On-line (Plant in Service daily plant walk) inspection check-sheets for review and approval by the Employer Engineering.
- b) The inspection sheets shall address plant/station specific layout and features (thus should not be limited to a generic document)
- c) The Plant monitoring record sheets shall prompt for critical inspection points, and record important process values such as:
1. Duplex filter position control.
  2. Bearing oil level marking/monitoring for standstill condition and running conditions.
  3. Lube tank level marking.
  4. Soot-blower in-operation monitoring.
  5. Abnormal plant noise emissions.
  6. Air, Gas, oil, ash or water leakages.
  7. Lube system pressure setting status.
  8. Bearings temperature and vibrations monitoring.
  9. Apparent instrument defects.

**1.14.3 Routine Inspection Records**

- a) The Contractor is to provide and comply with the following requirements:
- b) Compiling, submission and storage Spares information – stock/storage details, repairs, critical availability management information.
- c) Compiling, submission and storage of records concerning repairs and replacements.
- d) Compiling, submission and storage of records concerning daily and outage support inspections check sheets.
- e) Plant defect notifications.
- f) Submission and pre-approval of QCP requirements for unplanned & emergency repairs.
- g) The Contractor must in principle comply with Eskom standards and adhere to Eskom's maintenance planning system.

**1.14.4 Outage SOW Inspection Reports: Rotating hood**

- a) The Inspection reports must be compiled to address each Station Air Heater specific SOW and Inspection Scope shall differentiate between full or shortened inspections dependent on the outage type/duration.

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- b) The Inspection report content is based on compliance with the referenced Standard for Rotating hood Air Heater Maintenance execution.
- c) The inspection sheets shall cover the following inspection areas (and not limited to) as a minimum: (as detailed in each scope/plant section below), and as applicable to each individual Station/plant. The inspection document shall be clear in indicating current/measured condition v/s required condition, thus motivating the requirement for repair.
1. Stator level, shaft- and hood alignment.
  2. Seal frame incorporating expansion joints, articulation joints, control rods and the cast iron wear seal fixing point & condition with appropriate gaps & thickness.
  3. Collar seal, and rubbing ring condition, incorporating hood and seal-housing alignments.
  4. Seal setting springs, rods, nuts, and thermal compensator status with proposed setting adjustment.
  5. Measured Drive pinion and pin-rack installation and wear condition
  6. Main and auxiliary drive couplings, gearbox external and output pinion bearings.
  7. Bearing compartment, including bearings, lubrication system, bearing wear limit indicator (where applicable) and insulation.
  8. Fire-fighting system, incorporating internal reticulation, water supply line compensators and nozzles.
  9. Soot-blower system, incorporating pipeline wall-thickness survey, compensators, distribution mechanism/valve visual with headers/nozzles, activation mechanism (striker), and pipeline purge system.
  10. Erosion wear condition covering all areas requiring repair and protection. The purpose of the erosion protection approach shall be to prevent erosion damage to structural- and other components.
  11. Stator and element-pack condition, incorporating pack supports, radial plates, periphery flange, and element pack sampling to establish the wear condition/remnant life, and general condition of element packs and support system.
  12. Casing condition incorporating external casing, internal hoods, access platforms & ladders, doors, and door seals, turning vanes, structure supports.
  13. External lubrication system incorporating the supply & return piping.

**1.14.5 Outage SOW Inspection Reports - Rotating Matrix**

- a) The Inspection reports must be compiled to address each Station Air Heater specific SOW and Inspection Scope shall differentiate between full or shortened inspections dependent on the outage type/duration.
- b) The Inspection report content is based on compliance with the referenced Standard for Rotating matrix Air Heater Maintenance execution
- c) The inspection sheets shall cover the following inspection areas (and not limited to) as a minimum: (as detailed in each scope/plant section below), and as applicable to each individual Station/plant. The inspection document shall be clear in indicating current/measured condition v/s required condition, thus motivating the requirement for repair.
1. Rotor structure, shaft alignment, and sector plate setting.
  2. Rotor element-pack condition, incorporating element pack sampling to establish the wear condition/remnant life, and element pack supporting system.

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3. All Hot and Cold-end seals, incorporating radial, circumferential axial and hub areas.
4. Drive train, incorporating couplings, gearbox, shaft, bearings and shaft seals.
5. Fire-fighting system, incorporating internal reticulation, nozzles, external supply line with compensators.
6. Soot-blower system, incorporating pipelines, compensators, distribution mechanism with nozzles and activation mechanism.
7. Erosion wear condition covering all areas requiring repair and protection. The purpose of the erosion protection approach shall be to prevent damage to structural components, and require a documented and approved plan.
8. Casing condition incorporating external casing, access platforms, doors, and door seals.
9. External lubrication system incorporating supply & return piping.

**1.14.6 Spares lists**

- a) While the purchasing and listing of spares is dealt with on separate Spares Supply Contracts, the intent and management of spares lists is in the interest and support of Maintenance crews.
- b) Routine maintenance crews are responsible to provide full support to the Employer for the population/update of the Employers spares information and the gathering of spares information for general spares such as gaskets & sizes, bought-out spares specification details, etc.

**1.14.7 Outage Post-mortem Records**

- a) Documentation requirements and details to be supplied by the Contractor for the planning and attendance of the Outage Post-mortem meeting:
- b) Record of tasks not completed in accordance to the SOW.
- c) Record of recommended repairs not executed – to be incorporated into future SOW.
- d) Quality report, incorporating QCP completeness, QCP changes required, NCR Reports
- e) Refurbish able spares, incorporating a reason for rejection and required repair notification per item.
- f) Excess list of (unused) spares to be returned to Eskom.
- g) Notification of the official Spares List updates required.
- h) Notification of the official SOW Task list updates required.

**1.14.8 Outage Data Book**

- a) Notwithstanding the defined pre-submission of inspection findings (working documents), the Contractor shall compile a complete history file for the overhaul/repairs executed to the plant for submission upon completion of the project or opportunity repair.
- b) The repair history data-file should be submitted in both Hard-copy and electronic (scanned) format for Station use and filing.
- c) The Data-file shall contain as a minimum (and not limited to), the following:
  1. Index of contents and transmittal
  2. All documents relating to SOW, Task order – initial, additional, not executed, recommendations for future work.
  3. Inspections and finding reports
  4. Plant final commissioning settings, records, alignments
  5. Quality records – QCP's, NCR's, requests

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6. NDT records, reports
7. Repair execution records
8. Replacement & shortage spares
9. Manpower qualification & training records
10. Planning/program documents – bar chart
11. Post mortem records, reports

- d) The completed and approved Data-file shall be submitted within 1 month after completion of the Post Mortem meeting for evaluation and approval.

**1.14.9 Documents and Drawings**

- a) During the execution of the contract either party may request the other to provide access, free of charge, to technical information, General Arrangement drawings, sectional assembly drawings (for spares identification), operational histories (trends), maintenance histories (data books), operating advisory information (existing OEM manuals), plant maintenance procedures, quality assurance and control records (QCP's), specifications for bought-out spares, modification details, for work executed under this contract. Both parties shall allow access to their facilities as requested by the other party within the control procedures of both Organisations.
- b) At the termination of contract the above shared information related to operation and maintenance of the plant will remain the property of the employer.
- c) The requirements for the contents of inspection reports and data books is defined in the detailed Works Information of this document.
- d) The Contractor is required to provide the Employer with General Arrangement and Sectional Assembly drawings for all plant related to the contract. The drawings must be detailed with adequate information for the sole purpose of spares identification.
- e) All records and information shall be retained for the duration of this contract.

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## **1.15 Skills and Training**

### **1.15.1 Skills Requirements**

- a) The *Contractor* commits to align with the *Employer's* strategy to supply qualified artisans. Both Parties recognize the value of experience embedded in the *Contractor's* existing workforce as it relates to unqualified but experienced skilled personnel. The *Employer* agrees that the *Contractor* can make use of the unqualified but experienced skilled personnel on the following basis, for a period not exceeding 3 years from commencement date of the contract.
- b) Where the *Contractor* selects to make use of the remaining unqualified but experienced skilled personnel, this needs to be communicated and permission granted prior to execution of the work where such permission shall not be unduly withheld, where prior approval has been granted, a list of names and identification numbers need to be submitted quarterly to the Service Manager.
- c) The *Employer* has the right to check or request supporting documents including qualifications related to personnel being brought to the site to perform the work. If the *Contractor* fails to provide requested information, the *Employer* has the right to pay the semi-skilled rate for the affected personnel.
- d) The *Contractor* communicates this by supplying a list of unqualified but experienced skilled personnel to demonstrate that:
- e) Unqualified Fitters have at least 5 years of the Contractors technical/practical product experience, where fitters have less than five years' experience then the semi-skilled rate will be charged.
- f) Coded welders have passed a practical test for the applicable Contractors welding procedure which confirms competency
- g) The Parties agree, in terms of the Employment Equity Act and the Metal and Engineering Industries Bargaining Council main agreement, that the tasks performed by the above skills-sets be charged in line with the artisan rate stipulated in the Contract.
- h) The *Contractor* will continue to encourage skilled experienced personnel from within the current workforce to obtain applicable qualification.
- i) The contractor shall provide suitably skilled workers appropriate to the function and level of work.
- j) The required skills types are defined in Attachment D.
- k) Specific requirements (training and qualification) for different skills are defined in the section on 'Training requirements' below.

### **1.15.2 Skills definitions**

- a) The definition of the skills listed in the Rates and Skills table (Attachment D) is detailed in the list below and is in accordance to the Employers use of typical skills. If the Contractors operational model is different, a clear definition of role clarity must be provided for each skill. If any additional skills are recommended for the execution of the stipulated work, these should be listed as an addition to the offer.

#### **1.15.2.1 Definitions for skills, training and responsibility**

- a) Site/Outage Managers are deployed to control large works execution – in excess of 10 people. Site managers are responsible for the planning, co-ordination and reporting of Outage works execution.
- b) Site roving Managers are deployed to control small works execution – less than 10 people. Roving site manager's time are accounted for actual site working hours in attendance of Employers requested meetings and arrangements.
- c) Site Supervisors are deployed to plan, co-ordinate requirements and supervise the execution of work to the required accuracy and quality under the direction of the Employers Maintenance coordinator or the Contractors Site Manager. Supervisors are qualified/authorized to manage Plant Regulation permits, control basic quality execution, and to perform basic rigging such as vertical lifts for equipment.
- d) Site/Outage Fitter is qualified and has been subject to product specific training.
- e) Site/Outage Semi-skilled assistant is being developed as fitter and executes less-complex fitter tasks under supervision.

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- f) Site/Outage Assistants are deployed to support the Fitter, and has been subject to basic tools and equipment recognition training.
- g) Outage Supervisors are deployed to plan, co-ordinate requirements and supervise the execution of work to the required accuracy and quality under the direction of the Outage Site Manager. Supervisors are qualified/authorised to manage Plant Regulation permits, control basic quality execution, and to perform basic rigging such as vertical lifts for equipment. The ad-hoc lifting of centrifugal fan casings requiring sideways movement control is performed by qualified Riggers.
- h) Boiler makers are deployed for general boiler making and welding on the Works required in terms of level 2 and level 3 equipment.
- i) Riggers are deployed when abnormal lifting of equipment is required which requires more skill than the authorisation level of the supervisor. This requirement covers Equipment such as complex fan Casings, requiring sideways rigging/movement for removal/installation.
- j) A Fire-watch is an additional roving safety officer securing the area of safety risks during the execution of welding in the works.
- k) SHE representative is utilized for ad-hoc compilation of Safety information, such as the Safety File, Risk assessments, etc. and for formal site audits.
- l) Safety officer is deployed to oversee the execution of Safety requirements on Sites, such as Toolbox talks, general daily caution and input to workers, and workspace oversight. Safer representatives as well versed with the equipment and procedural risks in order to provide effective support.
- m) A Store man is deployed during outages to control Employer issued/returned Spares and Contractors issued tools, and consumables.
- n) Drivers are deployed where special tasks such as Forklifts are utilized to move equipment/spares.
- o) The Outage Planner is deployed if the Employer requires more than the norm (two time per week) works execution progress updates. Norm reporting is included into Contractor overheads.

**Note:** No provision is made for the deployment of Mechanical Quality Inspectors. The Contractor must provide the required service in compliance to the Works Information, as part of it's overhead allowance.

**1.15.3 Training requirements**

- a) Supervisors, Artisans, and semi-skilled workers shall be trained and qualified to perform work on Air Heaters. It is required that personnel have been trained on Plant specific components.
- b) Intensive training and knowledge on the relevant product and procedures.
- c) It should be noted that the plant details for Air Heaters on bearings, soot-blower systems, collar seals, thermal compensators, lubrication systems and seal setting are not generic to all Stations, thus requiring Station-specific training on these areas.
- d) The Contractor shall keep/provide proof of the related training for all personnel in the form of a training matrix for each person's (acquired experience) and an evaluation report shall be available for selection of appropriate personnel for any specific task. Proof of training shall be accompanied with student evaluation (testing of knowledge) and supervisor evaluations/recommendations.
- e) The evidence of compliance to the above requirements shall be available for the Employers Audit to verify compliance.
- f) Personnel responsible for Quality Control shall be experienced with Plant-specific and Procedure knowledge in order to perform effective Quality monitoring and improvement.

**The provision of maintenance services and technical support on Regenerative Air Heaters for participating Power Stations on an “as and when required” basis for a period of 5 (five) years****1.16 Planning****1.16.1 Requirements for Routine Maintenance**

- a) The Contractor adheres to the Employers SAP Maintenance planning system.
- b) The Contractor supplies information to the Site Service Manager which allows the Employer to update the maintenance information and planning systems.
- c) All defects and potential failures will be reported – defects are listed and corrective actions are planned according to priority.
- d) Where a Permit to Work is required, the work will be planned in conjunction with the relevant Production Manager.
- e) The execution of breakdown repairs lasting more than one day requires the submission of a program in order to indicate key task activities and track daily progress on a four-hourly basis.

**1.16.2 Requirements for Outages**

- a) The Process Control Manual for outages will be followed for submission of programs.
- b) The Primavera planning software shall be used for all Outage planning purposes.
- c) All programs shall be detailed to at least level 4 and must be fully resourced, linked and include for interfaces with other disciplines i.e. C&I, Electrical etc. to execute the agreed SOW during the agreed duration.
- d) All programs must be baselined and the baseline must be agreed upon with the Employer.
- e) The Contractor is responsible for status updates for the execution schedule on a twice weekly basis during the pre-outage phase.
- f) The Contractor must provide feedback on progress during execution on a daily basis.
- g) In the event of the Contractor's work reflecting late on the planning schedule, the Contractor is to compile and provide a recovery plan to meet the agreed completion date.

**The provision of maintenance services and technical support on Regenerative Air Heaters for participating Power Stations on an “as and when required” basis for a period of 5 (five) years****1.17 Warrantees**

- a) The requirement to obtain a workmanship warrantee (guarantee period) for 2 years on defined work/components typically stems from the fact that no access is available to confirm the operation of the component on the plant, until the next/first shut-down opportunity.
- b) Manufacturing and Installation faults are only detected with the scheduled 2 year inspection intervention in accordance to the Station Outage philosophy. Work or items not listed in the details below are subject to the standard 1 year workmanship warranty.
- c) While the performance of e.g. a white-metal bearing is revealed through the temperature of operation or oil analysis which therefor does not require an extended warrantee, other internal components, e.g. An internal Air Heater steam supply rotating thermal compensator can fail and knowledge of the failure can only be assessed when performing an internal inspection.
- d) The Contractor is required to offer a 2 year warranty for Workmanship in the following listed areas of Scope:

**1.17.1 Extended Service Warranty for Rotating Hood Air Heaters**

- a) Soot-blower system center and in-line compensators self-destructing due to incorrect installation.
- b) Soot-blower system indexer valve seizing and damaged due to foreign items ingress due to lack of control of clean-conditions when opened.
- c) Soot-blower system piping distortion due to incorrect expansion and sealing installation.
- d) Soot-blower and fire-fighting system center casting excessively damaged due to incorrect installation.
- e) Collar seals stuck away from rubbing ring due to incorrect installation.
- f) Cast Iron Wear Seals dislodge due to incorrect installation (mounting points and tapping quality). The proviso is that the seal frame flatness is within specification and/or the Contractor has informed the Employer of abnormal conditions accordingly.
- g) Seal wear and seal frame malfunction due to the incorrect installation of articulation joints and seal frame control members.
- h) Pinion dislodging due to incorrect installation.
- i) Pin-rack run-out causing excessive wear rate on pinion/pin-rack, and vibration due to incorrect run-out installation of the pin-rack.

**1.17.2 Extended Service Warranty for Rotating Matrix Air Heaters**

- a) Seal installation damage due to incorrect setting or installation.

**1.18 Exclusions**

- a) The supply and off-site refurbishment of Spare Parts is excluded from the provisions of this Service contract.
- b) Special equipment that may be required from time to time unless otherwise stated in the task list, is excluded from the inclusive costing, and must be identified by the contractor and offered on the contract rates:
  - 1. Large transporting trucks (for fans and motors).
  - 2. Forklifts and mobile cranes.
  - 3. Rigging/lifting equipment in excess of 100 ton capacity.
  - 4. Scaffolding.

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5. Lubricants required for operational function.

- c) Plant performance and condition monitoring that is already executed by the Employer, for example: Vibration trending and analysis, oil sampling and analysis on major rotating equipment.
- d) Basic cleaning of plant that is included in the station cleaning contract. 'Skilled cleaning' is included and defined in the Contract Task definition.
- e) Work required to the removal and re-instatement of Insulation and cladding.
- f) Asbestos removal

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## 2 Management strategy and start up.

### 2.1 The *Contractor's* plan for the *service*

#### 2.1.1 Programmes and Planning

The *Contractor* adheres to the agreed programmes submitted by the *Site Service Manager*. The Process Control Manual (PCM) for Outages will be followed.

The *Contractor* adheres to the *Employer's* maintenance planning system. The *Contractor* supplies information to the *Site Service Manager* which allows the *Site Service Manager* to update the planning system. This information is submitted within the time periods and as agreed with the *Site Service Manager*. The software system must be compatible with the Eskom maintenance system used at each site.

All defects and potential failures will be recorded. Defects are listed and corrective actions planned according to priority. Where a Permit to Work is required the work will be planned in conjunction with the relevant Production Manager.

### 2.2 Management meetings

#### 2.2.1 Low Service Damage Meeting

The *Site Service Manager* shall arrange monthly meetings throughout the *service period* at the power station at a time suitable to *Site Service Manager* and the *Contractor's* Representative.

If the *Site Service Manager* and the *Contractors* Contract Administrator's representatives fails to attend an arranged meeting twice in succession, it must be escalated to the *Service Manager* and *Contractors* Contract Administrator, if remaining unresolved it must be further escalated to the *Employer's* Contract Sponsor and the *Contractor's* General Manager Services.

Either the *Site Service Manager* or the *Contractor's* representative Site Manager may invite others to attend the meeting as necessary but may not delegate their attendance to others. If the *Site Service Manager* fails to arrange the meeting by the 15<sup>th</sup> of any month, the *Contractor's* Representative may arrange the meeting and both the *Site Service Manager* and the *Contractor's* Representative shall attend the meeting so arranged.

In the meeting the *Site Service Manager* and the *Contractor's* Representative shall review the previous month's actions and responsibilities in terms of the contract, decide what corrective actions are to be taken (if any), and by whom the contract requires them to be taken and by what time; review, agree and sign a summary listing of work carried out during the month under review which shall contain as a minimum:

- a) A schedule of any major incidents.
- b) The amount due to the *Employer*,
- c) Any substantial disagreements between the *Site Service Manager* and *Contractor's* Representatives and any disputes notified in terms of the contract,
- d) Review and note all NCR's raised and the status of the NCR's
- e) The *Contractor's* Representative's general comments on the work done during the month under review
- f) The *Site Service Manager* general comments on the work done during the month under review,
- g) Any notable achievements,
- h) Any contractual or commercial issues,

The *Site Service Manager* shall prepare a monthly report in the form of minutes of the above referenced meeting with the Low service Table attached, ensure that both he and the *Contractor's* Representative have agreed and signed the minutes before submitting copies to the Power Station Manager, CCA and *Service Manager* can distribute the minutes and if needed the Snr Manager Outages may be included.

The monthly assessment meeting held during the service period shall review effectiveness of the station's existing Low performance damages and whether they are appropriate for the following year. Following this review, under mandate by the *Employer's delegated* committee, any changes to Low performance damage

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is subject to negotiation on new Items and new requirements within the overall set of Low performance damages in this contract.

**2.3 Contractor's management, supervision and key people****2.3.1 Operations management and support (e.g. Head Office)**

The *Contractor* provides management, technical and support personnel to control and administer the *Service*.

**2.4 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* certificate.

The *Contractor* shall address the tax invoice to the *Employer* and include on each invoice the following information:

- a) Name and address of the *Contractor* and the *Service Manager*;
- b) The contract number and title;
- c) *Contractors* VAT registration number;
- d) The *Employer's* VAT registration number.
- e) Description of *services* provided for each item invoiced based on the Price Schedule;
- f) Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- g) (add other as required)

The unit prices and Prices in the Price List are adjusted at each anniversary by multiplying the unit prices and Prices applicable at the Contract Date by the price adjustment factor applicable at the anniversary date.

On a monthly basis the application for payment includes a summary of all the relevant information. The format and method of the application for payment is agreed with the *Site Service Manager*.

**2.5 Training by Employer**

The *Employer* will provide Plant Safety Regulations training to the *Contractor* and access to the Plant Safety Regulation panel. Plant Safety Regulation training which is successfully passed at one of the *Employer's* sites are valid at any other of the *Employer's* sites and does not need to be retrained on theory at the other sites. However the *Contractor's* employee will have to go through the site panel. This will avoid multiple retraining of the same outage staff for the same training content.

Base Crew replacement, during RP and Legislative training time for courses the *Contractor* will not have a replacement on site (only for first attempt)

All requirements for the *Contractor* to train their own staff is listed in the Works Information

**2.6 Management of work done by Task Order****2.6.1 Task Orders**

The *Site Service Manager* issues a Task Order to the *Contractor* which specifies clearly the work to be provided, additional specifications and procedures and any other constraints the *Contractor* complies with in providing the *Services*. The Task Order is issued before the *Contractor* Provides the *Services*.

Should resources additional to the base crew be required to complete the Task Order, the order includes the agreed forecast of the additional resources and the dates of completion

The *Site Service Manager* issues Task Orders to the *Contractor* six (6) months prior to a planned outage, so that it allows the *Contractor* to properly plan the *Services* within the time periods stated on the *Task Order*

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The Site *Service Manager* issues to the *Contractor* any information relative to the *Employer's* need and circumstance surrounding forecast future service required from the *Contractor*. This information allows the *Contractor* to provide staff in a cost effective and efficient manner.

**2.6.2 Short Term Planned Opportunity Maintenance (less than 7 days)**

- a) The short term planned maintenance start date is stated on the Task Order.
- b) Movement to short term planned maintenance dates could take place due to the countries demand for electricity.
- c) Any movement to short term planned maintenance dates shall be communicated in writing by the Site *Service Manager* at least 36 Hours before outage initiation.
- d) For any services requested/planned and subsequently cancelled within 36 hours of commencement, which is not covered by the base crew, and where the *Contractor* has incurred cost directly relating to site establishment of people and equipment, the cost will be compensated by the *Employer*.
- e) A new Task Order shall be issued which stipulate the revised short term planned maintenance date as soon as the new start date is available.

**2.6.3 Task Order Execution**

The *Contractor* performs *service* in accordance with the prior issue of a Task Order from the Site *Service Manager* or his delegate and completes it within the time period.

The *Contractor* also performs plant maintenance work, work on related outages and operations work after the issue of a Task Order. If requested the *Contractor* develops procedures (new procedures for new activities not covered by the Task Menu) applicable to the performance of designated tasks and submits the procedures to the Site *Service Manager* for acceptance. All *services* provided comply with the standard specifications, procedures and Site regulations, listed in the station Addenda.

Should the *Contractor* be unable to supply the resources required to complete a Task Order within the period specified, he immediately notifies the Site *Service Manager* to this effect. The notification includes recommendations as to how the work can be completed.

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### **3 Health and safety, the environment and quality assurance**

#### **3.1 Health and safety risk management**

The *Contractor* complies with the Occupational Health and Safety Act, 1993, (the Act) the *Employer's* Plant Safety Regulations GGR 0992, and all Safety procedures issued by the *Employer*.

The *Contractor* employs only people who have received sufficient training to ensure that they comply with the Act.

The *Contractor* appoints a person who liaises with the *Employer's* designated Safety Officer. The appointed person, on the request of the Site *Service Manager*:

- a) Undertakes safety audits at the Site and on the *Contractor's* employees.
- b) Refuses any employee, Sub-Contractor or agent of the *Contractor* access to the Site if such person is found to commit any unlawful act or any unsafe working practice or is found to be not authorised or qualified in terms of the Act.
- c) issues the *Contractor* with a work stop order should he become aware of any unsafe working procedure or conditions of non-compliance with the Act, Regulations and Procedures by the *Contractor*, Sub-Contractors or agents.

The *Contractor* attends the *Employer's* safety meetings (monthly for base crew and weekly during outages).

The *Employer* follows an accident prevention policy that includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incidents. The *Contractor* is expected to co-operate fully to achieve this objective. The *Employer's* Safety Risk Management section must be informed immediately of any injuries or damage to property or equipment.

#### **3.2 Environmental constraints and management**

All Legislative and Eskom environmental policies are to be adhered to:

##### **3.2.1 Service carried out in terms of:**

The *Contractor* will be required to ensure that all Services are carried out as per the ISO 14001 standard and Environmental Policy and Waste management Policy per site. The following environmental requirements are complied with at all times:

- a) Zero liquid effluent discharge.
- b) No chemicals will be dumped into the station drains or on the premises.
- c) No oil or waste will be dumped in an unauthorised area or unlicensed waste site.
- d) Asbestos will be handled and stored according to Act 15 of 1973 (Hazardous Substances Act).
- e) 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.

##### **3.2.2 New Environmental Legislation**

The *Contractor* is responsible to comply with any new environmental requirements, relevant to the *Services* Information that may come into effect as part of all stations Environmental Management System (EMS) during the duration of this contract.

##### **3.2.3 Existing Environmental Legislation**

In order to protect Eskom's environmental interests whenever a product or service is provided by a *Contractor*, the *Contractor* complies with all relevant and appropriate environmental legal requirements

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contained in governmental notices, laws and regulations promulgated by the central and provincial governments.

**3.2.4 Hazardous substances**

If product is classified as a hazardous substance, material safety data sheets (MSDS) must accompany delivery/use. In accordance with the Occupational Health and Safety Act (OHSA), Act 85 of 1993 section 10 and 11. If any hazard is identified by the *Contractor*, he must immediately inform the *Employer*.

**3.3 Quality assurance requirements****3.3.1 Quality assurance**

All work and spares supplied by *Others*, and the *Employer*, that may affect the *Contractor's* performance, must be inspected and approved by the *Contractor* prior to any work being undertaken and if not approved, must be reported to Site *Service Manager*.

Modification requirements are to be clarified with the *Employer's* engineering department, and designed, implemented and commissioned, to the relevant system engineer's requirements.

Eskom Generation subscribes to an Integrated Business Improvement (IBI) approach. Through IBI the organisation strives to reduce error which might result in incidents or other performance deviations, in support of the Generation mandate. The *Contractor* shall support this approach by adhering to the Generation IBI Operating Manual (LBA 00221MN) and to the *Employer's* local procedures, policies, or instructions, related thereto.

**4 Role players**

The nature of the service, the range and location of Affected Property, and the manner in which the electricity power supply industry operates make it necessary to identify several role players for this contract.

**4.1 Employer's representatives**

The *Employer* shall in conjunction with the Service Manager appoint a Site *Service Manager* at each power station where work in this contract is to be undertaken. The station Site *Service Manager* shall be responsible to the *Service Manager* for all Task Orders issued by the power station he represents. The power of the Site *Service Manager* does not include the authority to alter or change the terms and conditions of the Contract. The Site *Service Manager* only has the power to change the conditions of the applicable addendum, in conjunction with the *Contractor*.

The *Service Manager* may delegate the actions of him stated in this contract that are necessary for the setting up and administration of a Task Order.

Duties of a general nature relating to the overall performance and administration of this contract will generally not be delegated by the *Service Manager*.

**4.2 Contractor's representatives**

The *Contractor* shall identify to the *Service Manager* one of his key persons as the overall contract administrator to be known as the *Contractor's* Contract Administrator (CCA).

The *Contractor* shall appoint a representative at each power station where work in this contract is to be undertaken. The station representative shall be responsible to the CCA.

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Key persons may be mutually agreed upon and named in the station addenda. Such key persons can only be replaced by mutual agreement between the *Contractor* and the *Employer’s Site Service Manager*.

**4.3 Plant and Materials****4.3.1 Tests and inspections before delivery****4.3.1.1 Inspection Authority**

The *Employer* will appoint an approved Inspection Authority for the *Services* where required.

**4.3.1.2 Completion & Testing**

Completion of each Task Order occurs after the tests specified on the Task Order takes place, the relevant tests are accepted by the *Site Service Manager* and the *Contractor* has completed the Task Order to such an extent that allows the *Employer* to meet the operating requirements specified on the Task Order.

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

“Free Issue” Material and Plant spares will be supplied by the *Employer*.

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## **5 Working on the Affected Property**

### **5.1 Employer’s site entry and security control, permits, and site regulations**

The *Contractor* complies with all site regulations issued by the *Site Service Manager*. If a site regulation with which the *Contractor* must comply, changes, the *Site Service Manager* issues the new revision of the regulation to the *Contractor’s* Contract Administrator and instructs the *Contractor* to comply with the new revision.

### **5.2 People restrictions, hours of work, conduct and records**

The *Contractor’s* base crew normal working hours are to (as closely as possible) match those of the *Employer’s* maintenance department working hours (minimum 40 hours per week).

### **5.3 Health and safety facilities on the Affected Property**

As per agreed site addendum.

### **5.4 Records of *Contractor’s* Equipment**

Site Specific Requirement for gate access.

### **5.5 Equipment provided by the *Employer***

The *Employer* allows the *Contractor* to use Overhead Cranes and Hoists, provided the *Contractor’s* employee is an authorised Lifting Machine operator.

### **5.6 Site services and facilities**

#### **5.6.1 Provided by the *Employer***

The *Employer’s* computerised maintenance management system (SAP) is used for all planned maintenance, defects, and history recording etc. In this regard the *Contractor* provides the information on standard paper work, and the *Employer* provides the service of inputting the information into SAP.

The *Employer* provides water, power, compressed air, sanitation, garbage collection and any other services that may be applicable to provide the *Service* on or near the Working Areas. The *Contractor* pays for all medical facilities, first aid and telecommunication facilities as agreed for each site.

Material and Plant spares will be supplied by the *Employer*.

The *Employer’s* computerised maintenance management system (SAP) is used for all planned maintenance, defects, and history recording etc. In this regard the *Contractor* provides the information on standard paper work, and the *Employer* provides the service of inputting the information into SAP.

#### **5.6.2 Provided by the *Contractor***

All additional required procedures (excluding standard service maintenance procedures) submitted by the *Contractor* are accepted within the period of reply.

The *Contractor* provides management, technical and support personnel to control and administer the *works*.

The *Contractor* is to supply all the personal protective equipment, transport, accommodation, tools, equipment and consumables as per attached Annexure H to perform all required services on site.

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The *Contractor* is to establish a site yard in the location indicated by the *Employer*. Permission will be granted once the *Contractor* provides an accepted layout plan for sites where the *Contractor* has not yet established a *Contractor's* yard.

The *Contractor* will be responsible for supplying all the required buildings including separate venues for eating ablution and office work, etc.

The *Contractor* will ensure that all the required *services* are connected and that the relevant building codes and by laws are adhered to. The *Employer* provides access to *services* like water, sewage and electricity in order to connect *services* for the *Contractor's* yard.

Site Establishment will only be assessed for payment once a Certificate of Compliance issued by a duly authorised person is provided to the *Service Manager*.

If the *Employer* instructs the *Contractor's* to move the *Contractor's* yard to a new location, the *Employer* carries the proven costs to move and re-establish the site at the new location.

The *Contractor* complies with all site regulations issued by the *Site Service Manager*.

## **5.7 Policies, Procedures and Standards**

The *Contractor* undertakes the *Services* in accordance with the appropriate Policies, Procedures, and Standards included in **Attachment I** but not limited to these.

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## 6 List of drawings

### 6.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Drawing number	Revision	Title
		To be agreed upon as and when required

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## 7 Attachment Schedule

1	Attachment A	Technical Specifications
2	Attachment B	Task Menu's For Cluster
3	Attachment C	Resource Table List
4	Attachment D	Policies, Procedures and Standards Applicable to Contract
5	Attachment E	Typical Outage Philosophy
6	Attachment F	Typical Generation Outage Plan
7	Attachment H	Typical General Overhaul Scope For Power Station A