

Title:

**Bottom ash hoppers scope
of work**

Unit no.

1-6

Area of Applicability:

[Maintenance/Outage](#)

Documentation Type:

SOW

Revision:

0

Required departments

**HMD, Outage,
Engineering****Compiled by**

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System Engineer

Date: 08 / 06/ 2022.....

SCOPE OF WORK

1. Description of the works

Repairs to boiler ash hoppers for maintenance and during outages in 2021 up to 2024

2. Work to be Performed by the *Contractor* for the works

The *works* includes the supplying of the necessary equipment to complete the required work.

The *Contractor* provides all equipment and associated engineering services to fulfil and execute the requirements of the Works Information and to provide a fully operational system after execution of Works.

BOILER ASH HOPPERS REFURBISHMENT: LEVEL 1. Requires welding procedures to be developed to perform work.

The *Contractor* to repair Boiler Ash Hoppers;

The *Contractor* to perform the following work during outages:

- The inspections carried out to identify defects and submit a detailed report,
- The cleaning of ash build up and clinkers on the boiler ash hoppers after the unit shut down,
- The cleaning and unblocking of sluice ways to the ash sump,
- The cleaning of the sealing trough, which includes removal of ash and washing out of the trough,
- The complete replacing of sealing trough around boiler ash hoppers,
- The repairs/ replacing of hopper outer doors, frames, seals and grizzly bars,
- The repairs/ replacing of valves around the boiler ash hoppers,
- The repairs/ unblocking and flanging of all water pipes,
- The repairs/ replacing of splash plates,
- The repairs/ replacing of dipper plates,
- The repairs/ replacing of sluice nozzles, valves, pipes and liners,
- The repairs/ replacing of inspection doors, reject lines, trench covers, grating and light beams,
- The repair/ replacing of pump and motor base,
- The repair/ replace of manifolds on sluice and ash pumps,
- The alignment of motors on sluice pumps, ash pumps and crushers, □ The washing and cleaning of the ground floor daily, □ The commissioning of plant during return to service.

NOTE: NOT ALL THE ACTIVITIES UNDER THE SCOPE WOULD BE EXECUTED DURING AN OUTAGE; A PLANT INSPECTION WILL BE CARRIED OUT WITH THE CONTRACTOR TO DETERMINE THE EXACT AMOUNT OF WORK TO BE CARRIED OUT AND THE AMOUNT OF THAT WORK CAN BE LESS OR MORE THAN WHAT IS ON THE SCOPE OF WORK. SOME WORK NOT MENTIONED ON THE SCOPE COULD SURFACE DURING INSPECTIONS AND THAT WILL BE EXECUTED AND PRICED ACCORDING TO THE PRICE LIST.

3. Work to be performed by the Contractor for the Works

As per the attached scope of work.

3.2 Health and Safety Risk Management

3.2.1. Health and Safety Requirements

The *Contractor* will comply as a mandatory with the following:

- Section 37.2 of the Occupational Health and Safety Act, No 85 of 1993.
- Health and Safety Standards, as per Duvha Power Station Contractors Safety file. This file will be handed over on contract award.
- All staff will undergo a one day Safety Induction training course one week before site Occupation
- Adhere to Eskom & Duvha Power Station No Smoking Policy
- All Employer Safety and Operating Procedures, which are attached hereto.
- All applicable Eskom and statutory requirements, as defined in the Occupational Health and Safety Act, No 85 of 1993, and the applicable Codes of Practices, as defined, referred to or available with regard to Occupational Health and Safety. The following items are highlighted because of their specific importance:

The *Contractor* acknowledges that it is fully aware of the requirements of all the above and undertakes to employ only people who have been duly authorized in terms thereof and who have received sufficient safety training to ensure that they can comply therewith.

The *Contractor* undertakes not to do, or not to allow anything to be done which will contravene any of the provisions of the Act, Regulations or Safety and Operating Procedures.

Employer may, at any stage during the currency of this agreement be entitled to:

- a) Do safety audits at the Contractor's premises, its work places and on its Employees.
- b) Issue the Contractor with a work stop order or a compliance order should Employer become aware of any unsafe working procedures or conditions or any non-compliance with the Act,

The *Contractor* must appoint Safety Representatives to assist the Employer Representative to:

- a) Identify possible hazards, dangers and risks
- b) Eliminate potentially dangerous conditions and actions
- c) Ensure a safe working environment

3.2.2. Plant Safety Regulations

- The *Employer* shall, on request from the *Contractor*, isolate required plant from all sources of danger as described in the Plant Safety Regulations.
 - The *Employer* shall, on request, make available a copy of the latest revision of the Plant Safety Regulations to the *Contractor*.
- a) The *Contractor* shall conform to all rules and regulations applicable to Plant Safety and shall complete each and every Workman's Register prior to working on the plant.
 - b) At every permit change the *Contractor* shall ensure he withdraws himself/herself/his staff for that period of permit suspension/revocation and thereafter only proceed with the Works after signing onto the new permit.
 - c) The *Contractor* to ensure that he/she/all sub-Contractors/personnel/staff/his visitors are medically, physically and psychologically fit to enter the Duvha Power Station and specifically any confined space.
 - d) The *Contractor* is prohibited from entering Radiation Areas. The *Employer* in exceptional cases shall give special permission.
 - e) The onus is on the *Contractor* to ensure that the correct confined space requirements and tests have been done/met by the *Employer* prior to entry into any confined space or hazardous plant areas.

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- f) The *Contractor* shall ensure that all personnel including himself are competent to carry out the Works. Proof of competency for technical and safety aspects must be available as and when required on site.

3.2.3 Limited Access Register

- The LAR is for the person in charge of the plant to maintain control over activities taking place on his plant that are not covered by the Plant Safety Regulation and Operating Regulations for High Voltage Systems. Activities that are allowed to be carried out under the LAR must not require a permit and must satisfy the following criteria:
 - They must not involve danger to the person carrying out the activity;
 - No plant isolations must be required;
 - The activity must be performed by a skilled person;
 - There must be no risk of a production loss;
 - The duration of the activity must be less than 24 hours
- It is very important that the person who plans to do an activity on a plant under the LAR informs the person in charge of the plant (ASS on the panel or PPO at WTP) of what will be done. This means verbally telling the person in charge of the plant what will be done and not just signing the LAR book. The LAR book must also be signed.
- It is also important that as soon as the activity is completed the person, who was doing the activity, notify (verbally) the person in charge of the plant that conditions are back to normal and that the LAR has been signed off. Just signing the LAR book is not sufficient.

3.2.4 Health and Safety Arrangements

- a) The *Contractor* must ensure that himself/herself/and all personnel attend a Health and Safety Induction Course prior to starting with their work. The Induction Course can, on request, be provided by the *Employer* and will have to be renewed annually preferably 2 weeks before contract anniversary date.
- b) The *Contractor* shall comply with the requirements as set out in the Duvha Power Station *Contractors* Safety Manual SAS 0012. The sheet on the first page of the Safety Manual must be completed and signed by the *Contractor*, Site Manager and submitted to the *Employers Representative* before taking possession of the Works or starting the Works. This sheet will only be valid for the duration of the Works.
- c) The *Contractor* to ensure that all appointments required are completed and that the appointee and appointees fully understand their responsibilities and are competent and trained to execute their duties. The appointees/appointee shall ensure that all duties are carried out and records are kept by the *Contractor* for review/audit by the Employer or Inspector of Machinery.
- d) Duvha Safety Risk Management and the Inspector of Machinery has the authority to visit and inspect the *Contractor's* workplace or site establishment to ensure that tools, machinery and equipment comply with the minimum safety requirements or the *Contractors* Safety Management Plan is enforced or complied with.
- e) The *Employers Representative* shall be entitled to instruct the *Contractor* to stop work, without penalty to the Employer, where the *Contractor's* personnel fail to conform to safety standards or contravene health and safety regulations.

The *Employers Representative* is entitled to cause the *Contractor* to discipline his employees, take disciplinary action and to submit disciplinary action reports to the *Employers*

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Representative. The *Contractor* shall implement additional health and safety precautions where necessary or has required in the Occupational Health and Safety Act, No 85 of 1993.

- f) The wearing of Safety Glasses when working in the plant and Duvha Site, as well as walking through the plant is compulsory.
- g) The *Contractor* to ensure that he/she/all *Sub-Contractors*/personnel/staff/his visitors are medically, physically and psychologically fit to enter the Duvha Power Station.
- h) A Medical Certificate shall be submitted to the Duvha Safety Induction Officer prior to induction. Once submitted, then only will induction take place.
- i) The Medical Examination, at the *Contractors* cost, shall be carried out by a Registered Professional Occupational Health Practitioner and the examination shall include the following tests: Eye Test, Blood Pressure, Heart Function, Hearing Test, Lung Function and a Blood Test. A thorough examination should be done and previous physical injuries, as well as occupational diseases/complications should be covered. Allergies, especially to 'bee stings' and chemicals should be covered. Psychological evaluation should be covered for personnel working in elevated positions on scaffolds, confined spaces where ventilation and skin/physical irritation is prevalent, and humid conditions. Epileptic conditions must be covered as well.
- j) If at any point in time during the execution of the Works, the *Contractor* has a radiation-related incident/exposure, the onus is on the Contractor to immediately notify the Employers Representative, the Medical Station, the Risk Manager and the Safety Risk Management Department. The onus thereafter is for the Contractor to immediately arrange, at his/her cost, for blood samples to be taken by a Registered Laboratory and for this sample to send to the Excellerator Laboratory in Cape Town for full radiation exposure tests. This test results are then to be discussed with the Duvha Occupational Health Practitioners, who will then advise the Power Station Management on the risk, if any, of the incident/exposure.
- k) The *Contractor* shall conform to all applicable Eskom and statutory requirements, as defined in the Occupational Health and Safety Act, No 85 of 1993.
- l) The *Contractor* shall and will take full responsibility and accountability for all other people/staff/personnel/labour that he/she employs or utilises, whether in full-time/parttime/contract basis, in executing the works or other work whilst on the Employers premises.
- m) The *Contractor* shall understand, participate and be fully competent in the NOSA Safety Management Systems that the Employer complies with.
- n) The *Contractor* shall ensure that he is aware, understands and complies with any amendments, regulations or changes or gazetted changes to the Occupational Health and Safety Act, No 85 of 1993.
- o) The *Contractor* may on request of the Employer participate in Safety Related audits or investigations with permission of the *Employers Representative*.
- p) The *Contractor* shall familiarise himself with the proposed draft Construction Regulations, issued by the Department of Labour and shall ensure that as soon as they are promulgated, he complies fully during the execution of the works or when working on the *Employers* premises but also shall ensure he immediately starts aligning his business/operation to comply with these regulations.

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- q) The *Contractor* shall ensure that only Safety Harnesses are used for all work carried out in elevated positions, as defined in the Occupational Health and Safety Act, No 85 of 1993 or any other Code of Practice or standard or the draft Construction Regulations.
- r) All Safety Equipment or Machinery used shall only be those that comply with the SABS Codes of Quality and Practice or any Code as stipulated in the Occupational Health and Safety Act, No 85 of 1993, and any amendments thereto.
- s) The *Contractor* shall at all times consider himself as "Employer" as defined in the Occupational Health and Safety Act, No 85 of 1993 and shall not consider himself as under supervision or management of the Employer with regard to Health and Safety Requirements but only from a Commercial Contractual Condition of Contract. Under no circumstances shall the *Contractor* consider himself a sub-ordinate or being given supervision.
- t) The *Contractor* shall provide and maintain his own facilities as required in the Occupational Health and Safety Act, No 85 of 1993 or any other Code of Practice or standard or the draft Construction Regulations, if not agreed contractually or arranged by the *Employer*.
- u) The *Contractor* shall comply with the Smoking Policy of the *Employers*, available on request from *Employers Representative*.
- v) The *Contractor* shall have Safety Systems in place at his premises for the total contract period and these shall include the following:
- Safety Management Structure and Compliance to these
 - Statutory Appointments
 - Records and documentation of all Risk and Hazard Analysis.
 - Planned Job Observations Records and Documents.
 - Employment history and records of all personnel, part-time or full-time or contract labour.
 - Medical History of all personnel, part-time or full-time or contract labour
 - Training and Competency Records with regard to Safety, Health and Environment.
 - Training and Competency Records with regard to the skills he/she uses to carry out the Works or any other works in the Employers premises.
 - Compensation Commissioner records and proof of registration.
 - Records and documentation with regard to any *Sub-Contractor* or labour-only contracts he places or uses to carry out the Works or any other works in Employers premises.
 - Personal Protective Equipment and Safety Equipment Inspection, training and competency records and documentation.
 - Employment contracts for all *Sub-Contractor* or labour-only contracts.
 - Compliance to a Safety System, such as NOSA or any other system that is similar in nature.
 - Records of all incidents or accidents, Category A, B, C or D and vehicle accidents, incurred during execution of this Works or any other Works in the Employers premises.
 - Records of all man-hours, including *Sub-Contractors* or labour-only contracts, the *Contractor* spends on the Employers premises.
 - Written Safe Work Procedures for all hazardous tasks the *Contractor* executes on the Employers premises.
 - A Fall Protection Plan for all elevated work the *Contractor* does on the *Employers* premises.
 - Environmental Plan and awareness training.
 - Induction training records of his staff by himself/herself.
 - Minimum wage compliance for the different skills and to which Bargaining Council compliance is made to and proof of membership, if any.
 - Risk Assessment of this type of works

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- Proof of checklists and where applicable test certificates, regarding *Contractor's* tools, equipment, machinery, mobile equipment, vessels under pressure and any other applicable checks required by the Act.
- Proof of authorisation/accreditation from Department of Labour and or other Statutory Body for this type of works, if applicable
- Emergency Evacuation and Rescue Plan for the hazardous tasks related to the works.

The Principle Contractor must ensure that his *Contractors (Sub-Contractors)* do also have a Health and Safety File and that must be accepted by the Principle Contractor.

The Safety Officer employed by Duvha Power Station will audit these Health and Safety Plan to ensure compliance with the provisions of the Act.

3.2.5 SHE. Documentation Required from the Contractor

The following documents must be provided together with the tender by the *Contractor* in terms of Health, Safety and Environmental performance, should the *Contractor* not provide this information it will be assumed that it does not exist

- Letter of good standing with COID or any insurance body.
- An Organogram indicating the names of all persons that will hold legal appointments on the project in terms of the Act.
- The expected roles, responsibilities and authority of those who are proposed to receive legal appointments.
- The resume'(s) of the proposed Safety Officer(s) and Environmental Officer(s) his/their roles, responsibilities and authority is required in terms of the scope of work.
- The Contractor's company Safety, Health and Environment policy.
- Provide an overview of the system/program that is utilized to manage Safety, Health and Environment
- Proof of environmental, health and safety awareness training (provided by a recognized training body) for all employees required to perform work at Duvha Power Station. The Contractor shall be responsible to ensure that his employees are trained before commencing work at Duvha Power Station. Proof of training provided, i.e. attendance registers and the training content, shall be submitted to the Eskom Agents and/or Environmental and Safety Officers for approval before commencing work on-site. Failure to do so shall result in an immediate termination of the contract.

3.2.6 Fire Precautions

- a) Any tampering with the *Employer's* fire equipment is strictly forbidden. Cost of damages will be for the *Contractor*.
- b) All exit doors, fire escape routes, walkways, stairways, stair landings and access to electrical distribution boards must be kept free of obstruction, and not be used for work or storage at any time. Fire fighting equipment must remain accessible at all times.
- c) In case of a fire, report the location and extent of the fire to the Electrical Operating Desk at extension **2222** or **2690**.
- d) Take the necessary action to safe guard the area to prevent injury and spreading of the fire.
- e) Falling sparks and welding slag, when carrying out hot work, is prohibited. The onus is on the *Contractor* to prevent and contain falling sparks. All hot work above zero metre Boiler and Turbine floors must be adequately protected and screened to prevent falling sparks.

3.2.7 Reporting of Accidents

- a) 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

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control measures to prevent a recurrence of the same incidents. The *Contractor* is expected to fully co-operate to achieve this objective. The *Employers* Representative must be informed immediately of any Category B or C or D incidents. Category A incidents and any damage to property or equipment must be reported to the *Employers* Representative within 24 hours. Incident investigation report forms to be completed within 24 hours for category A, B, or C or D injuries.

- b) Radiation incidents must be immediately reported.
- c) The *Employer* can and shall issue safety contraventions which, if of a recurring nature or risk to others Health and Safety poses a threat, can result in breach of contract conditions and terms and can lead to cancellation of contracts.
- d) In reporting Category C and D incidents, the *Contractor* shall include and submit the following documents, or any additional as required by the *Employers* investigation team or *Employers* Representative:
 - Proof of Contract of Employment.
 - Proof of WCL notification to Department of Labour and Workmen's Compensation Fund.
 - Proof of Medical Doctors Note/Certificate detailing nature of injury and period of rest.
 - Death Certificate, if Category C fatality.
 - Risk and Hazard Analysis, if not in place prior to injury. ☐ Written Safe Working Procedure, if not in place prior to injury,
 - Or any other document from Section 4v, as requested.

Note: This report does not relieve the *Contractor* of his legal obligation to report certain incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

3.2.8 Radiation Protection

The *Contractor* conforms to Duvha Power Station Procedure HMS0002 when performing any industrial radiography.

3.2.9 Hazardous Substances

It is required in terms of the General Administrative Regulation (Regulation 7) that any Manufacture, Importer, Seller or Supplier of hazardous chemical substances shall supply the receiver, free of charge with sufficient information for the user. These enable the user to introduce the necessary measures as regards the protection of the health and safety of persons. It is therefore the responsibility of the *Contractor* to supply the information as per attached list. If information is not available for whatever reason, the *Contractor* must indicate on the form and give reasons to Eskom.

3.2.10 Thermal Insulation Containing Asbestos

- a) The *Contractor* shall not disturb any thermal insulating material on the plant until it has been positively identified as not containing asbestos. Approval has to be obtained from the *Supervisor* before any thermal insulation is disturbed.
- b) All stripping of asbestos material shall be undertaken strictly in accordance with the *Employer's* Standard, SAP 0022, available from Safety Risk Management.
- c) The *Employers* Representative shall advise the *Contractor* whether areas that are to be stripped of lagging have been identified as containing asbestos.

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- d) The *Contractor* shall be obliged to ascertain from the *Employers Representative* in advance whether areas required to be stripped are non-asbestos. No lagging material containing asbestos fibres shall be stripped by any *Contractor*, other than the *Contractor* appointed to remove asbestos.
- e) The *Contractor* appointed to remove asbestos, may not begin removal without first obtaining the necessary permission from the Department of Labour, AIA and the *Employers Representative*.
- f) If the *Contractor* suspect exposure to himself or any other personnel, he shall then within 24 hours notify the following people – *Employers Representative*, Department of Labour, Workmen's Compensation and Duvha Medical Station.
- g) All *Contractors* carrying out asbestos related 'work' or 'demolition', as defined in the promulgated Asbestos Regulation of 10 February 2002 must be accredited and authorised to execute this type of work by the Department of Labour.

3.2.11 Housekeeping

The *Contractors* equipment does not impair the operation of the plant or access to the plant. Working areas are cleaned daily. All cables and hoses are routed so as not to cross over floors and walkways or roads. Where walkways, floors or roads need to be crossed a proper checked plate ramp shall be positioned over cable and hoses to prevent disruption of the traffic in that specific area. All equipment is packed neatly without interference to access. All excess scaffolding material is removed from working areas after the scaffolding has been erected. Scrap bins are available and emptied daily by the Employer.

3.2.12. Speed Limit

All vehicles must be driven with due consideration for personnel and property. A maximum speed limit of 40KM per hour will be adhered to on the premises at all times.

3.2.13 Barricading

Symbolic safety signs depicting "Danger" and "No entry" are to be used when cordoning danger zones.

3.2.14 Scaffolding

The Employer will be responsible to arrange with the Scaffolding Contractor on site, to build a scaffold from ground level up to desired level on behalf of the Contractor.

The Employer will arrange all scaffolding that needed by the Contractor to be able to execute the work.

All scaffolds must be erected in accordance with SANS 10085. Scaffolds shall be erected, altered or dismantled under the supervision of a competent person who has been appointed in writing for this purpose.

No scaffolds and platforms are used without having been safety cleared and the documentation completed.

3.2.15 Eskom's Cardinal Rules

The Contractor will be responsible to adhere to the following 5 Eskom's cardinal rules:

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Rule 1: Open, Isolate, Test, Earth, Bond, and/or Insulate Before Touch

(That is, any plant operating above 1 000 V)

No person may work on any electrical network unless:

- He/She is trained and authorised as competent for the task to be done;
- A pre-task risk assessment to identify all risks and hazards has been conducted prior to any work commencing;
- An equipotential zone is created for each worker on the job site by earthing, bonding, and/or insulating according to approved procedures;
- All conducting material is connected together, all staff on site wear electrical safety shoes, and insulating techniques are applied according to standards; and
- The authorised person (team leader) has certified and shown all team members that the apparatus is safe to work on.

Rule 2: Hook up at Heights

Working at height is defined as any work performed above a stable work surface or where a person puts himself/herself in a position where he/she exposes himself/herself to a fall from or into.

No person may work at height where there is a risk of falling unless:

- A pre-task risk assessment to identify all risks and hazards has been conducted prior to commencing any work at height;
- He/She is appropriately trained;
- He/She is appropriately secured during ascending and descending; and ☐ He/She is using an approved fall arrest system where applicable.

Rule 3: Buckle up

No person may drive any vehicle on Eskom business and/or on Eskom premises:

- ☐ Unless the driver and all passengers are wearing seat belts.

Rule 4: Be Sober

No person is allowed to work under the influence of drugs and alcohol.

"Under the influence" means the use of alcohol, drugs, and/or a controlled substance to the extent that:

- The individual's faculties are in any way impaired by the consumption or use of the substances; or
- The individual is unable to perform in a safe, productive manner; or
- The individual has a level of any such substance in his/her body that corresponds to or exceeds accepted medical/legal standards; or
- The individual has a level of alcohol in his/her body that is greater than 0.02% blood alcohol concentration.

This includes any level of an illegal substance in the body, irrespective of when the substance was used.

Rule 5: Ensure that you have a Permit to Work (PTW)

Where an authorisation limitation exists, no person shall work without the required Permit to Work (PTW), which is governed by the Plant Safety Regulations, Operating Regulations for High Voltage Systems (ORHVS) etc.

- ☐ No plant is to be returned to service without the cancellation of all permits on that plant in accordance with procedure.

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NB: In the case of live work, a "live work declaration form" is to be completed by the authorised person who is the person responsible for the safe execution of work according to relevant standards and procedures.

Please ensure that these rules are understood and communicated with the urgency that they deserve. If any of these rules are unclear or the consequences not understood, please do not hesitate to discuss it with Eskom, Duvha Power Station.

4 Environmental Constraints and Management

Duvha Power Station is ISO 14001 compliant. All spillages (whether oil, grease, diesel, chemical, etc) are prevented at all times and where accidents occurred in line with any spillages, immediate remedial actions are taken to clean-up the affected land using the appropriate spill-cleaning chemicals/absorbents.

The *Contractor* is required to ensure that all goods, services or *works* supplied in terms of the Contract conform to all applicable environmental legislation. Where work is done on Eskom's Sites, the goods, services or *works* supplied will also to Eskom's environmental specifications.

5 Quality Assurance Requirements

The *Contractor's* ISO 9001:2000 Registration certificate of compliance or equivalent must be supplied with tender. If the *Contractor* is not Register he/she will supply with his tender document his quality policy.

The *Contractor* will comply with the *Employer's* Quality Requirements as specified in Eskom Generation Standard GGS 0462 in the Works Information. Annexure B to this Standard indicates the specific application thereof.

All Quality Control documentation must be submitted to the *Employer* within 7 (Seven) days after contract award. Quality Plans must include hold and witness points, must clearly state 2nd and 3rd party interfaces and quality/test specifications.

The Quality Control documentation that will be handed over within one week of order placement by the successful *Contractor* to the Employer will have the Following:

5.1.1. *Contractor's* Quality Assurance and Quality Control

The *Contractor* compiles, in conjunction with the *Employer*, *Engineer* and the *Supervisor*, a product verification plan. This document shows at which stages during the contract involvement is required, and what types of inspection, testing, witnessing etc. are carried out to ensure that the requirements of the specifications are met.

5.1.2. Quality Control Plan

The Quality Control Plan consists of the following as a minimum and is accepted by the Engineer, *Supervisor* and the *Contractor* prior to commencement of the work. The QCP will also include welding procedures were necessary.

A covering page which includes and makes provision for the following:

- Document unique number.
- Revision number.
- Page number

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- Provision to incorporate all inspection report numbers.
- System worked on
- High level description of work execution
- Provision for review and approval signatures by the *Contractor*, the *Project Manager* and the *Supervisor*.
- Provision for final releases signatures by the *Contractor*, *Project Manager* and the *Supervisor*.

The work execution logic and sequence for the fabrication and erection addition to this hold, witness points etc. are also detailed.

Test reports

Where tests were performed they are recorded and the positions of measurements are traceable to the specific area of testing against the records. Therefore the Contractor will submit all test reports that has been performed to the Project Manager.

6 Programming Constraints

6.1 Program to be Submitted

The *Contractor* will be responsible to prepare and submit the Provision of Manpower and Consumables to Perform High Pressure Welding during Unit 4 IR Outage program (this will be done as per SOW provided) in a specified format by the employer, at least 7 working days before work starts.

The *Contractor* submits a high-level programme with his tender, showing the time required to perform the *works* on the unit.

The *Contractor* ensures that his planning is co-ordinated with the requirements of the user/s and others dependent on his/her performance.

The Contractor will submit a Bar Chart program (MS Project or Primavera) format to the Project Manager, indicating daily time scale and also showing the required Witness and Hold points in terms of Quality Control.

a) Accepted Program

At the time period stated in the Contract Data, the *Contractor* submits his program for the *Project Manager's* acceptance.

6.2. Information to be shown:

The *Contractor* shows the following on each programme he/she submits to the *Employer* for acceptance:

- The *starting date* and the Completion Date.
- The start and finish of each item in the Price List.
- All non-working days
- A method statement for each operation identifying the Equipment and other resources which the *Contractor* plans to use.
- Planned Completion.
- All interfaces required from the *Employer* and others.
- The dates when the *Contractor* plans to complete work allowing the *Employer* and others to do their work.
- Provisions for float and time risk allowance.

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- The dates when the *Contractor* will need access to a part of the *site*, acceptance and Plant and Material and other things to be provided by the *Employer*.
- Access to site will be on 04 January 2016 but the actual start date of the *works* will be determined by National Control, the *Employer* will give notice of 24 hours.

In addition to the above information the *Contractor* shows the following information on each revised programme:

- The actual progress achieved as well as the forecast for the remaining work.
- The effect of implemented compensation events and of notified early warning matters.
- How the *Contractor* plans to deal with any delays and to correct notified Defects.
- Take note that, the revised programme should be submitted to the *Employer* within 1 day after any change has occurred.

7. Services and Other Things Provided by the *Employer*

7.1 Site Services Provided by the *Employer*

- Electricity at no charge, available at existing points of connection, both 220V AC and 380V 3phase supply. The *Employer* does not guarantee continuity of supply and no claims for standing time as a result of power failures will be considered.
- Potable water at no charge, available at existing points of connection. □ A yard with no infrastructure is available on request
- Toilet facilities at no charge, available at existing facilities.
- Should the *Contractor* qualify for a site, the *Employer* will provide a site within the premises of the Power Station for the *Contractor* to establish himself for the execution of the works. The Project Manager together with the Site Manager will allocate a site to the *Contractor*. A site close to the connection points of the above services cannot be guaranteed.
- At least one Supervisor shall be authorized as a Responsible Person in terms of the Eskom Plant Safety Regulations to take out Permits to Work on plant (PTW).
- At least one two Supervisors and/or one two Riggers will undergo a hoist crane course on site to be authorized to use hoist cranes for material handling if required. These costs will be paid by the *Contractor* for the course.

Warning

Phase rotation may change during a power supply break. The *Contractor* checks rotation of their equipment before recommencing of work.

i. Contractor's Site

An area is available on request, to the *Contractor* for the establishment of a site office.

The *Contractor* shall supply, install, properly maintain and remove all temporary construction facilities and utilities necessary for the complete performance of the *works* including the following:

- Any damage to installed lighting will be repaired at the *Contractor's* expense.
- The reticulation of electricity, water and any other services required by the *Contractor* from a supplied central distribution point.
- All temporary buildings including change rooms and all related work including temporary fire fighting equipment.
- All first aid facilities. □ Fuel and lubricants.

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- Heating fuels.
- Transportation facilities on and off site.
- Communication facilities.
- Compressed air and gases.
- Maintenance of lay down and storage areas.
- Electric panels and distribution wiring for erection and within *Contractor's* yard. The *Contractor* will be responsible for any fees charged by the client for connections up to their electric panels.
- Construction and potable water connections.
- Security of *Contractor's* yard.
- Temporary lighting to ensure safe working conditions.

7.2 Medical Facilities

- a) The *Contractor* provides a First Aid service to his employees and Subcontractor. In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer's* Medical Centre and facilities will be available.
- b) Outside the *Employer's* office hours, the *Employer's* First Aid Services will only be available for serious injuries and life threatening situations.
- c) The *Employer* shall be entitled, however, to recover the costs incurred, in the use of the above *Employer's* facilities, from the *Contractor*.
- d) The *Contractor* to ensure that qualified and competent First Aiders and Emergency Care staff is permanently on site and at actual construction site for emergency situations, as and when they arrive.
- e) The *Contractor* or his staff shall not move the injured party from the incident position and site unless the person/person's life is in danger or the person is moved by a qualified and trained Emergency Care Worker.

i. Refuse Disposal

- a) The *Employer* will provide special colour coded bins for refuse disposal. The *Employer* will empty these bins.
- b) The *Contractor* ensures that all workers under his control strictly adhere to the correct use of refuse bins:
 - Maroon bins: - Scrap metal only
 - White bins: - Lagging and general household rubbish
 - Yellow bins: - Ash, dust, coal dust and sand
- c) For the full duration of the works, the *Contractor* is responsible to keep the work area clean of any rubble, and to place all refuse into the bins provided.
- d) Removal of scrap and waste, including concrete/ash/refractory material/guniting material, to a location within the Duvha Power Station security gates and/or the ash dams must be included in the Price Schedule or Bill of Quantities. This must be inclusive of labour and equipment i.e. forklifts spades, shovels, transport, etc.

7.3 Emergency Services

- Medical Station available on site during normal working hours. The emergency telephone number internal to Duvha is 2222/2235 or 013 690-0222/0235 from an external land line or cell phone and can be used to obtain emergency assistance.
- Fire protection and rescue available on site 24 hours per day also at the above number. The Contractor complies with the requirements of Employer's Standard NWS 1494 Revision 4

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"Fire prevention and protection of Contractor's premises on Engineering Sites" and of Site Regulations pertaining to fire protection.

b. Security Arrangements

- a) A access permit will only be issued to that Contractor staffs that has done Safety Induction at Duvha Safety Risk Management, where induction would have only been done if a copy of the person's valid medical certificate was given to the Safety Officer prior to induction. Before induction, a *Contractors* Safety Manual should have been completed and signed by the relevant parties.
- b) The *Contractor* applies for temporary access permits (*Contractor's Permit*) at the Security gate, 48 hours prior to the *Possession Date* (refer to 2.2.3 below). The *Contractor* personnel shall be required to be in possession of a *Contractor's Permit* at all times.
- c) All *Contractor* personnel shall be issued with a temporary access permit (*Contractor's Permit*) which will contain the following information:
 - Name
 - ID Number
 - Company
 - Validity date
- d) All *Contractor's* permits must be returned to Protective Services when the workers leave the site on the last working day. Salaries/Wages should be paid to contract staff on the last working day outside of Duvha Power Station or at other pay points outside of the *Employers* property.
- e) In order to assist Protective Services with the issuing of permits and the identification of personnel on site, the successful area. This list must be delivered to Protective Services, or can be faxed to (013) 6900348. The list, identified with the *Contractor* is to supply a list of all personnel that he intends using on site, at least 48 hours prior to entry of the Security *Contractor's* name, is to contain the following information:
 - Employee Name
 - Employee ID Number
 - Eskom Safety Co-ordinator signature
 - Eskom *Employers* Representative signature
 - Copy of the first page of the ID book of every employee of the *Contractor*, photocopied to reduce the size to 65%.
 - The list of details has to be completed on the special form attached to the *Contractors* Safety Manual, referred to in Section 2.3.2 (b).

To speed up the process of gaining access to the site, the *Contractor*, must compile detailed lists of all tools and equipment to be taken on site before arriving at the Power Station Security gate. A special Tool list form (SCP-0001/2) is available at Protective Services. An authorised copy of this list must be retained to be used again when the tools and equipment is removed from site after the completion of the *Works*.

The *Contractor's* visitors and all personnel shall conform at all times to the security arrangements in force at the site. Application forms for visitors must be filled in by the *Contractor's* Site Manager and approved by the *Employers* Representative, one day before the visit and submitted to the *Employer's* Protective Services office. Visitors will not be allowed on site if the necessary forms are not in the possession of the security staff.

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The Chief of Protective Services may, with valid cause, remove any of the *Contractor's* personnel from the site, either temporarily or permanently. He may deny access to the site to any person whom, in the opinion of the said Chief of Protective Services, constitutes a security risk.

No un-authorised vehicles will be allowed on site. Only *Contractor's* vehicles with displayed Contract Vehicle Permits disks will be allowed on site. *Contractor* Vehicle Applications should be directed to the *Employers* Representative. All vehicles entering the site must be roadworthy. No overloading of personnel or equipment will be tolerated on site.

The *Contractor* will be restricted to the *working areas* associated with his place of work. The *Contractor* is forbidden to enter any other areas, and must ensure that his employees abide by these regulations.

Parking inside the Power Station is strictly forbidden, except for loading purposes *Employers* Representative will indicate designated parking areas.

No recruiting of casual labour may be done on Eskom premises, including the area outside the Power Station Security Gates.

Process to be followed to gain access to the site:

- Signed Contract in place via Purchasing Department
- Collect and complete a *Contractors* Safety Manual, which must then be checked and accepted by *Employers Representative*. Original back to Safety Risk Management.
- Arrange for all *Contractors* staff for induction with Safety Risk Management.
- Each *Contractors* staff to arrive for induction with a valid Medical Certificate. Failure to do so will result in no induction being given to those person/persons.
- Proceed to Security Department for access cards.

c. Power Supply Arrangements

- a) Where required, the *Contractor* must provide his own portable 380V electrical distribution boards, and supply cables to and from the boards, for all his power supply requirements to execute the *Works*.
- b) *Contractors'* Electrical Distribution Boards shall comply with OHSA as referred to in the Electrical Installation Regulations and the Electrical Machinery Regulations. Each DB board brought on site shall have a certificate of compliance issued by an accredited person. This certificate shall be submitted to *Employers* Representative prior to connection, who will then submit to Duvha Power Stations Electrical Maintenance Department.
- c) The *Contractors'* Electrical Distribution Boards must be installed at the works on a time negotiated with the *Employers* Representative, prior to the *possession date*. The *Employer* will connect distribution boards to a 380V three-phase AC power supply, only after the *Contractor* has submitted the valid certificate of compliance.
- d) All *Contractors'* Electrical Distribution Boards must be earthed to the steel structure of the plant.
- e) A qualified and competent electrician, as per Electrical Installation Regulations, to be present when connecting DB Boards to Duvha supply to prevent damage to equipment.

d. Plant Identification Labels

The *Contractor* is responsible to replace and make good all plant identification labels that were removed or damaged during the execution of the *Works*.

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e. Commissioning and Take Over

The *Contractor* will supply personnel to assist the *Employer* with cold and hot commissioning of the *Works*.

f. Electrical Welding Machines

- a) Boiler Area - Apply earth cable to steel structure closest to the welding spot.
- b) Turbine Casings - Apply earth cable on the particular component as close as possible to the welding spot.
- c) Do not apply the earth across the valve or on the valve body. This will damage the valve internals.
- d) When welding a valve to pipe work, connect the earth cable to the pipe work close to the area being welded.
- e) Bearings - Do not apply the earth across the bearing or on the bearing shell. This will damage the bearing internals.

g. Barricading and Screens

- a) The *Contractor* will provide and install solid barricades and warning devices to ensure that equipment and persons are not exposed to danger or to prevent access to dangerous areas.
- b) All welding, flame cutting and grinding work shall be properly screened to protect persons from any injury.
- c) All gratings shall be covered with adequate protective screening when welding or flame cutting in the vicinity to prevent falling sparks and welding slag.
- d) If a Category C or D injury has occurred, the scene and all access or entry points shall be immediately solidly barricaded and prohibitive signs shall be installed.

h. Construction, Erection and Maintenance Work on Site

- a) The *Contractor* will be responsible for the provision of all or any temporary or expendable materials required for the temporary storage of material.
- b) The *Contractor* will be responsible for the safeguarding, care and security of all items supplied by the *Employer* whilst in the *Contractor's* custody and control, until completion of the whole of the *works*.
- c) The *Contractor* will be responsible for all hoisting and lifting, by qualified riggers, and equipment that is required to complete the *works*, unless otherwise clearly identified and stated in the contract.
- d) The *Contractor* will be responsible to check and verify correctness of civil and structural (temporary/permanent) work installed by others prior to commencement of installation / erection or during usage.
- e) The *Contractor* will be responsible for cleaning where necessary of all mating surfaces before erection.
- f) The *Contractor* will be responsible for the repair, replacement or correction as necessary of any and all items of Plant and / or Materials supplied by the *Employer* which are damaged and / or lost whilst in the *Contractor's* custody and control.
- g) The *Contractor* Site Manager shall ensure that only competent and medically fit personnel will be allowed to work on the *works*.
- h) All cutting of pressure parts will be done with pneumatic grinders only.
- i) *Contractor* to have a copy of the draft Construction Regulations and to understand and implement the required safety systems.

i. Adjacent Plant, Foundations and Buildings

The adjacent plant and equipment may not be modified without written permission from the *Employer*. Modification in this sense includes, but is not limited to the following:

- Welding onto existing plant
- Cutting into existing pipe work
- Drilling into Civil structures

j. Restrictions on the Use of *Contractor's* Equipment

The *Contractor's* equipment does not impair the operation or access to the plant. Therefore no compressed air is tapped off from the *Employer's* compressed air system.

k. Restrictions Applicable to the *Contrator*

a) Installation Restrictions

b) Adjacent plant, foundations and buildings:

The adjacent plant and equipment may not be modified without written permission from the Employer. Modification in this sense includes, but is not limited to the following:

- Welding onto existing plant
- Cutting into existing pipework
- Drilling into civil structures

c) General

- The *Contractor's* equipment does not impair the operation or access to the plant.
- The *Contractor* does not use barrier tape for barricading, but use solid barricading.
- No compressed air is tapped off from the Employer's compressed air system.
- The *Contractor* is responsible for cleaning where necessary of all mating surfaces before erection.

d) Refuse Disposal

The *Contractor* is responsible to keep the work area clean of any rubble. All waste introduced and/or produced on the Employer's premises by the *Contractor* for this contract is handled in accordance with the minimum requirements for the Handling & Disposal of Hazardous Waste in terms of Government Legislation as proclaimed by the Department of Water Affairs and Forestry Act 1994 Ref: ISBN062116296-5. All refuse is disposed of at a registered dump site. There is no such dump site at Duvha.

l. Title

The *Contractor* transfers ownership of all plant, inclusive of all drawings and design manuals for the works, to the *Employer*. The *Contractor* has no title to material from demolition. All equipment that is removed or replaced remains the property of the *Employer* and is stored in a place designated by the *Employer*.

8 Drawings

All drawing will be provided by the Employer if available. In case were drawings are unavailable, Contractor/Partner can make use of hand drawings or any rough sketch that can help a

Contractor/Partner to execute the work/activity.

[illegible]

9 Specifications

Title	Date or revision	Tick if publicly available
Occupational Health and Safety Act, No 85 of 1993 and any amendments thereafter	Act, No 85 of 1993	Yes

Title	Date or revision	Tick if publicly available
Supplier Contract Quality Requirements Specification (QM-58)	QM-58	Yes
Duvha Power Station <i>Contractors</i> Safety Manual	SAS 0012 Revision 3	Yes
The design, erection, use and inspection of access scaffolding	SABA 085	Yes
Draft Construction Regulations		Yes
Personal Protective Equipment against falls from a height – Full Body Harnesses	SABS EN 361:1992*	Yes
Personal Protective Equipment against falls from a height – Connectors	SABS EN 362:1992*	Yes
Personal Protective Equipment against falls from a height – Fall arrest systems	SABS EN 363:1992*	Yes
Personal Protective Equipment against falls from a height – Test Methods	SABS EN 364:1992*	Yes
Personal Protective Equipment against falls from a height – General requirements for instructions for use and for marking	SABS EN 365:1992	Yes
Standard Specifications for Thermal insulation at Power Station	NWS 1454, Rev.3, April 1983	Yes
Requirements for Radiographic Acceptance Levels for Welds Inspection on Eskom Plant (36-732)	Rev 0, September 2014	Yes
Eskom NDT Personnel Approval (NPA) for Quality Related Special Processes on Eskom Plant Standard (240-83539994)	Rev 1, January 2018	Yes
Requirements for Non-Destructive Testing (NDT) on Eskom Plant Standard (240-83540088)	Rev 1, January 2018	Yes

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Construction and Repair Welding of Primary Air, Induced and Forced Draught Fans Standard (240-56241639)	Rev 2, December 2017	Yes
Control of Welding during Construction, Repair and Maintenance Activities Standard (240-56241933)	Rev 2, November 2017	Yes
Qualification, Certification and Accreditation Requirements for Personnel and Entities Performing Welding Related Work on Eskom Plant Standard (240-56246601)	Rev 2, November 2017	Yes
Welding of High Pressure Temperature Tube and Pipework Standard (240-56355225)	Rev 2, October 2017	Yes
Heat Treatment of Welded Components Standard (240-77196678)	Rev 1, November 2017	Yes

Standards, standard specifications and procedures specified by the *Employer* are deemed to include all the latest revisions of and/or amendments to and/or additions to such specifications and standards applicable at the Contract Date.

The *Contractor* is responsible for ensuring that he/she is in possession of all relevant documentation.

Eskom Standard Specifications may be obtained from the Conference Centre, Megawatt Park, Maxwell drive, Sunning hill X3, Sandton.

Duvha Power station Standard Specifications may be obtained from the Information Management at the Power Station.

ISA standards will be used, especially for ergonomics.

The Oxford dictionary will be used for spellings and meanings of words