

PART 3: SCOPE OF WORK

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C3.1: EMPLOYER'S SERVICE INFORMATION

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1. Introduction

Kusile Power Station Management has decided to outsource the On-line Leak Sealing Scope of service function to a suitably qualified, experienced and well-established Service Provider. This document describes the detail of the applicable plant areas, standards, quality, requirements, specifications, terms & conditions as well as the criteria to qualify for the tender.

2. Supporting Clauses

Scope 2.1

2.1.1 Purpose

The purpose of this document is to define the specified Leak Sealing Scope of work activities requirements for Kusile Power Station. The station is expected to perform at 85% UCF, 10% PCLF and 5% UCLF, and the Leak Sealing management strategy efforts must support this requirement. It is therefore imperative that the successful and suitably qualified Service Provider aligns his/her organisation fully to the Leak Sealing activities and processes laid down in this document.

2.1.2 Applicability

This document shall apply to all employees at Kusile Power Station.

2.1.3 Effective date

This document is effective from the authorisation date.

Normative/Informative References 2.2

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] Act No 85 - 1993: Occupational Health and Safety Act & Regulations.
- [2] Act No 102 - 1980: National Key Points.
- [3] Act No 99 – 1987 Rev 2: National Fire Act.
- [4] IEC 60529: Degrees of Protection Provided by Enclosures (IP Code)
- [5] IEC 60617: Graphical
- [6] SANS 1700: Fasteners
- [7] SANS 347: Categorisation and Conformity Assessment Criteria for all Pressure Equipment
- [8] SANS 17025: General requirements for competence of testing and calibration laboratories
- [9] SANS 1123-2007: Pipe Flanges
- BS 4504: Circular flanges for pipes, valves and fittings

2.2.2 Informative

414-32-C&IM-SP: Kusile Maintenance User Requirement Specification

237 - 0081 Rev 0: Post Mechanical Maintenance Requalification

237 - 0060 Rev 0: Foreign Material Exclusion

237 – 0097 Rev 0: Leak Sealing Procedure

237 - 0016 Rev 0: Integrated Business improvement – prevention and improvement Standard

Note: See Annexure C: S.H.E. Requirements for Tender Enquiries.

Annexure D: S.H.E. Tender Evaluation and Scoring Card.

Annexure E: Supplier Suspension Process 32 – 726.

36 - 942 Rev 0: Arc Flash Protection Specification.

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

ESKPVAEY6: Eskom Operating Regulations for High Voltage Systems.

GGR 0992: Plant Safety Regulations.

36 - 782: Calibration Standard for Process Calibration Equipment

GGA - 1182: Control of chemical products in a Power Station

GGSS - 0423: Specification for Low Pressure Valves

GGSS - 1181: Specification for chemical product and material used in a power plant

GVLIR 0007: Safety health and environment Specifications for Contractors

240-98790279: Online Leak Sealing: A Guide For Power Plant Maintenance Personnel

ISO 9001: Quality Management Systems

Definitions 2.3

2.3.1 Contractor: Service provider contracted for supplying specific service to Eskom, Kusile Power Station.

2.3.2 Employer: Eskom, or Eskom Kusile Power Station.

2.3.3 On line leak sealing device: is a device that is used to seal a leak on a component without first reducing the pressure, cooling or removing the product in a system under pressure

Abbreviations 2.4

Abbreviation	Description
BS:	British Standard
BU	Business Unit
GMR 2	General Machinery Regulation 2
IEC	International Engineering Consortium
OEM	Original Equipment Manufacturer
OHSA	Occupational Health and Safety Act
PCLF	Planned Capability Loss Factor
PEIC	Production Engineering Integration Coal
PM	Plant Maintenance
PPE	Personal Protective Equipment
PS	Power Station
PSR	Plant Safety Regulations
PTW	Permit to Work
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
QMP	Quality Management Programme
SABS	South African Bureau of Standards
SAP	Systems, Applications, Products (Plant Maintenance, Procurement, Finance and Materials Management) integrated computer system.
SAP PM	SAP Plant Maintenance
SHE	Safety, Health, Environment
SOW	Scope of Work
UCF	Unit Capability Factor
UCLF	Unplanned Capability Loss Factor
URS	User Requirement Specification

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2.5 Roles and Responsibilities

2.5.1 The Employer

- a. The Employer and Contractor in this SOW are committed towards the following;
- Retention of critical skills
 - Continuous cost reduction
 - Health & Environment Safety
 - Transfer of operational experience and skills

- v. Responsible for the implementation of the online leak sealing guideline
- vi. Ensure that a process and quality review and approval thereof is carried out on any proposed online leak sealing contractor by Sustainability, Assurance and Supplier Audits, before any work is done on site
- vii. Ensure that the contractor carrying out the work has an Eskom approval status.

- viii. Ensure that all areas subjected to FAC damage are excluded from any online leak sealing activities where there is a risk of plastic collapse unless or otherwise a proper containment box methodology and designs which will be proposed by the contractor has been reviewed and approved by PEIC and/or site Engineering approval structures.
- ix. Ensure that the risk assessment is compiled and approved by the PSM to ensure safe execution of work.
- X. Ensure that design packages supported by manufacturing data book are in place and approved for leak sealing work at all times.

2.5.2 The Contractor

- a. All Contractor employees shall comply with Eskom's policies and site regulations, including non - use of cell phones in restricted areas, adherence to Eskom's Life Saving Rules, adherence to Generation Occurrence Management Procedure, No Smoking Policy, Kusile Maintenance User Requirement Specification, etc. These requirements will be detailed during the induction training process and are stipulated in the referenced documents and their references.
- b. The Contractor shall compile improvement programmes to enhance plant performance and achieve cost reductions and the Employer will approve such programmes.
- c. The Contractor shall be responsible for all mechanical maintenance as per Employer's instructions, processes and systems.
- d. The Contractor shall employ a competent person who is accredited and responsible to perform all required tasks as per the given SOW.
- e. The Contractor shall make use of local black economic empowerment program through the use of black business. The Contractor during the duration of the contract shall train persons from the local community in relation to the works, such proof shall be given to the Employer for verification and acceptance as per SD&L requirement and 10% shall be released upon receipt of the results and/or proof of obtained qualification.
- f. The contractor's performance will be measured by the Employer against those areas which contribute to the Employer's business and the Contractor shall be panelised accordingly as per established and agreed upon KPI's. (e.g., Reliability, Availability and Safety).
- g. Areas of measurement include the Employer's key business indicators and will be redefined from time to time.
- h. Complementary service offered by the contractor to improve Plant and labour performance includes but not limited to the following:
 - i. Project management
 - ii. Value engineering
 - iii. Procedure and documentation writing
 - iv. Design services
 - v. Spares management
 - vi. Technical advice
 - vii. Operational and production process review
 - viii. Asset management in accordance with PAS55
 - ix. Component failure analysis reporting
- i. The Employer may request the Contractor to ensure that an accurate description of spare parts is maintained in the Employer's stores and the Contractor informs the Employer as to any recommended changes.
- j. The Contractor is to ensure that any service rendered does not interfere with the Employer's scheduled work and should be aligned with the Employer's work control management process.

- k. Should the Employer become aware of any changes to the activity schedule (programme of notifications), the Employer may issue the Contractor with a revised programme.
- l. The contract entered into with the Contractor is non-exclusive and work against this contract can only be performed upon receipt of a task order.
- o. All works will be subject to anytime inspection from the Employer.
- p. Please note that equipment will only form part of the works once the respective area has been commissioned and handed over to Generation. The Contractor shall take cognisance of the fact that the contract start date can deviate.
- q. The Contractor maintains all year round, agreed base crew at Kusile Power Station which is supervised by the Contractor with any changes to the crew being negotiated and agreed upon with the Employer.
- r. This contract is for corrective maintenance (breakdowns) and outage SOW.
- s. Spillage is viewed to be very important for plant housekeeping and any spillage caused as a result of the Contractor shall be cleaned by the Contractor.
- t. The Contractor shall perform leak checks on all responsible plant areas and inform the Employer's representative accordingly. Defects must be raised on the system to address any plant deviations.
- u. The Contractor shall ensure that KKS labelling are secured to all equipment and that broken KKS labels are reported to the Employer immediately.
- v. The Contractor must ensure that they have responsible persons (in terms of PSR and ORHVS) for any work performed on plant.
- w. All maintenance technically qualified (above semi-skilled) Contractors will be trained and authorised (in terms of PSR and ORHVS) within 6 months of the contract award date. Training will be supplied by the Employer only once and retraining will be paid by the contractor. The Contractor should be found competent and be authorised to take PSR and ORHVS permits.
- x. The Contractor must ensure that all personnel successfully complete a written examination for the relevant regulation based on the Fossil Fuel Firing Regulations. Training will be provided by the Employer.
- aa. Before any work starts on site the Contractor is responsible to submit their Safety File to the Employer for review and acceptance and ensuring that the safety file meets the requirements stated by the Employer.
- bb. The Contractor is also responsible for their employees' annual medical checks which must be up to date and also kept in the Safety File. Site Induction must be done before any work is done by any Contractor on site.

2.5.3 Condition Monitoring

- a. The Contractor shall assist in the implementation, recommendations and corrective actions which are identified by the Kusile Power Station Condition monitoring programme, including Station Thermal Efficiency Program (STEP).

2.5.4 Continuous Improvement

- a. The Contractor shall implement a program of continuous improvement to optimise Plant performance and reduce system and equipment failures.
- b. The Contractor shall participate in improvement programs as stipulated by the employer.

2.5.5 Management and Reporting

- a. The type of reports, level of detail and frequency of reporting will be mutually agreed by the Employer and the Contractor during the contract negotiation phase of this agreement. These may change from time to time on request by the Employer.
- b. The Contractor to be represented at any ad-hoc meetings that may arise in order to address any production or safety related matters.

c. Liaison meetings shall be held with the Employer's Representative or his/her delegate on a monthly basis to discuss any technical details, or concerns.

2.5.6 Storage and Delivery Requirements

a. The Contractor shall be responsible for all leak sealing scope maintenance services and spares during the execution of the work associated with the contract. If any spares are to be found defective/out of specification they shall be replaced at the Contractor's expense.

2.5.7 Quality and Documentation Control

- a. The Contractor shall ensure that any witness, hold and inspection points are strictly adhered to.
 - b. The Contractor to ensure that all measuring and test equipment is calibrated as per the relevant SANS standard at all times & proof thereof must be readily available.
 - c. All Quality References and Standards as stipulated in this document will be adhered to.
 - d. Work will only be conducted with an Employer approved Quality Management Programme.
 - e. The Contractor shall utilise the Employer's quality documentation management system and processes.
 - f. The Contractor shall prepare a QCP for the repair activities, which shall be approved by the System Engineer, Eskom Welding Administrator and Site Approved Inspection Authority for Quality Services. The hold points shall include:
 - i. Verification of repair procedures, designs, welding procedures and operator qualifications
- Kusile Power Station Online Leak Sealing of

- ii. Material identifications
- iii. Dimensional control
- iv. Visual examination of completed repair
- v. Verification of NDT results
- vi. Final inspection of component during operation
- vii. Approval of data package

2.5.8 Project Implementation

- a. The Contractor shall supply a project implementation plan including at least the following:
 - i. Manpower plan
 - ii. Organogram
 - iii. Skills required and associated cost per skill (e.g. artisan, site manager, etc.) as per Appendices A

2.5.9 Manpower Requirements

- a. The number of maintenance staff required to execute the specific works is to be decided by the Contractor after his/her assessment of the scope of work and submitted to the Employer for approval.
- b. The successful Contractor shall utilise/provide skilled and suitably qualified staff with current experience in the following but not limited disciplines:

- i. Occupational Health and Safety Act 85 of 1993
 - ii. NEC contract management
 - iii. Quality Management Control and Assurance procedures
 - iv. Leak Management as per the Employer's procedure 237-0061
 - v. Foreign Material Exclusion (FME) as per Employer's procedure 237 - 0060
 - vi. Familiarisation and adherence of employer's SHE goals and initiatives
 - vii. On-line leak sealing.
- c. Staff must meet minimum requirements of Eskom job descriptions, with additional requirements specified.
- d. All staff brought onto site in connection with this work scope should be able to fluently speak, understand and write in English.
- e. Proof of qualification is to be supplied on request by the Employer.
- f. The Contractor ensures that all staff being brought onto Kusile site has a valid fitness certificate based on the specified plant man-job specification.
- g. Ensures proper behaviour of personnel under his/her supervision as per the Kusile culture.
- h. Ensures training of all personnel under his/her supervision. The training required will include but not limited to Eskom safety training requirements, related plant training and Kusile culture.
- i. Ensures high morale of staff and competency.

Process for Monitoring 2.6

Not applicable

Related/Supporting Documents 2.7

Not applicable

2.6 Key Performance Indicators

KPI	Requirement	Requirement	Source of Evidence
PSR authorization		1x RP per shift	Authorisation Certificate
Quality compliance		Zero rework on all activities	Reports after execution
Safety Compliance		1X Behavioural Safety Observation (BSO) per week	Monthly Safety Report

Failure to meet any of the key performance indicators will result in 5 %. deduction of the total monthly payment to the contractor (as per price list).

Where plant breakdowns, equipment and instrument damage is incurred as a result of negligence on the contractor's side and the cost of repair or replacement exceeds the 5% penalty fee, the cost of repair or replacement shall be recovered from the Contractor or shall be for the contractor's account. Replacement will always be one on one (replace with same specification).

Any downtime for repairing activity and maintenance leading to production losses as a result of the Contractor's personnel failed to do their duties as prescribed in this scope, will result in the 5% penalty being applied. Contractors program shall serve as evidence in such instances. In the event that there are repeat incidents resulting in production losses or impact on Leak sealing performance compromised and the investigation identifies human error as a direct or contributory cause, the personnel involved shall be removed from site and replaced with a competent resource meeting the requirements as specified in section 2.6.1

2.6.1 Contractor's management of his personnel

- a. The Employer may have stated reasons to instruct the contractor to remove any person from the Contract Site. The Contractor arranges and ensures that immediately after receiving the instruction to remove any person, the person has no further responsibilities with the work included in this contract. The Employer shall not pay the Contractor for the services of the affected personnel from the day of the Contractor receiving the instruction. Failure to comply with the instruction to remove any person from site shall be a breach in contract and shall result in termination of the contract.
- b. The Contractor ensures that all staff being brought to Kusile power station has a valid medical screening and fitness certificate.
- c. All staff brought onto site in connection with this scope of work should be able to fluently speak and write in English and have computer skills.
- d. Proof of qualification to be supplied to the Employer for all personnel at contract award and/or prior to assigning personnel to Kusile site.
- e. The Contractor shall adhere to all provisions within the Kusile Power Station Safety, Health, Environmental, and Quality requirements.
- f. All the works will be subject to random inspection from by the Employer.
- g. The Contractor ensures that each shift has authorised personnel for PSR (AP)
- h. The Contractor shall ensure that the necessary authorizations (PSR) are renewed prior to their expiry so that each shift is always equipped with duly authorised personnel.

3. Document Content

3.1 Re-commissioning

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

Contractors Management, Meetings and Key People 3.2

- a. Before work starts on site, an inaugural meeting is held with the Contractor and the Employer, to explain in detail all requirements of the Site Regulations.
- b. The Contractor is issued with a file of current Site Regulations on arrival. The file remains the property of the Employer and the Contractor is responsible for its maintenance and updating to include new or revised regulations as issued by the Employer.
- c. The Contractor must ensure that all personnel operating mobile equipment and vehicles are authorised, this includes but not limited to;
 - i. Forklifts
 - ii. Mobile Cranes
 - iii. Cherry Pickers
 - iv. Sky Jacks
- d. The Contractor shall be responsible for the regular inspections and daily equipment checks of the mobile equipment and vehicles including record keeping.
- e. The Contractor must ensure that all personnel performing work on the plant are authorised, this includes but not limited to;
 - i. Confined space locations

- ii. Working at heights
- iii. Heat stress areas
- iv. Scaffolding
- v. Hazardous substances.

3.3 Works Information

3.3.1 On-line Leak Sealing of Equipment

3.3.1.1 Applicable Plant Area

3.3.1.1.1 Constraints

a. Please note that no maintenance work shall take place without the permit to work procedure and all safety, health and environmental specifications, Contractors must adhere to at all times.

3.3.1.1.2 Applicable S.O.W

- a. The Contractor will be issued with the work packages, the relevant works therein describing the works that must be performed and on which equipment works must be performed.
- b. The Contractor shall record all as found condition and corrective actions performed in regards to this SOW.
- c. The Contractor shall ensure that comprehensive service records and all related history documentation are recorded for the duration of five years minimum and shall be made available to the Employer anytime upon request.
- d. The Contractor to execute the works within the times stipulated on the works order.
- e. The Contractor shall perform work as per 237 – 0097: Leak Sealing Procedure as a guide.
- f. All works will be governed by the Employer's works management process.
- g. The Contractor immediately reports any disabling injury as well as any threat to health or safety of which it becomes aware of on the site to the Employer.
- h. The works may only commence once the Contractor has received an official task order describing the works that must be performed and on which equipment this works must be performed.
- i. Planning and supervision of leak seal operations should be conducted by qualified and experienced personnel from the Contractor's side.

3.3.1.1.3 Activities Prior to Repair

- a) The Eskom Welding Administrator shall, if possible be involved in the inspection and examination of the failed component.
- b) The operating parameters shall be assessed by the Eskom Welding Administrator, or the proposed method of repairing the leak seal shall be studied to determine the risk to the safety of personnel and equipment.
- c) The equipment used to establish and maintain the seal should be designed to provide uniform distribution of coolant. Provision should be provided for temperature monitoring instrumentation and dependable flow monitoring of some sort, (observation of gaseous plume is not considered an adequately dependable flow monitoring method).
- d) Provide adequate ventilation to assure adequate circulation of volatile coolants. In confined areas, an air analyser should be in operation and frequent observations performed.
- e) The Contractor is to ensure that the work area is to be left in the same or a better state on completion of any work.
- f) The contractor shall be responsible for the design of the clamp and/or containment box and submitted to Employers Engineering Department for approval.
- g) The contractor shall supply the required compound to perform the leak sealing activity.

- h) The drawing for the clamp and/or the containment box will become the ownership of the employer.
- i) No drilling of flanges shall be permitted as the repair method
- j) Work may only start when the contractor's Responsible Person (RP) has signed on the relevant Permit to work (PTW), with all safety precautions in place.
- k) No work may be started unless the contractors RP have conducted a Pre-job briefing, an authorised work package has been issued and all contractors' staff has signed the workers registers.
- l) Two-man rule shall apply to all online leak sealing activities, no exceptions.
- m) For every call out the contractor shall meet with the employer's representative to discuss and agree on the repair method after full assessment of the defect.
- n) The contractor shall supply for every online leak sealing activity a safe working procedure to be reviewed and accepted by the employer.

3.3.1.1.4 Costing Matrix

- a. Refer to Appendix A for cost breakdown structure.
- Site Facilities and Services Provided by Contractor 3.4

3.4.1 Service Cost

- a. The Contractor's performance evaluation shall be done during monthly meetings between the Contractor and the Employer.
- b. Quoted prices should be in line with the attached costing sheets, Appendix A

3.4.2 Communication and Correspondence

- a. All correspondence includes:
 - i. Kusile Power Station
 - ii. Employer's Contract number
 - iii. Contract description
 - iv. Correspondence subject matter
 - v. Employer's name and contact details
 - vi. Contractor contact details
 - vii. Date
- b. Where appropriate the correspondence includes the Employer's reference and is delivered as a single package.
- c. All communications from the Contractor are numbered sequentially with a prefix as advised by the Employer. The Employer responds in like manner. The prefix and numbering system is decided upon at the Inaugural meeting.

3.4.3 Tender Requirements

- a. A proposal is to be submitted by the tenderers for the above-mentioned scope of work, including the referenced in 32-726 and 414-32.
- b. Hereafter a contract shall be negotiated with the successful Contractor.
- c. The appointment of successful Contractor is at Eskom's (The Employer) sole discretion taking into account the factors which Eskom considers relevant.
- d. The tender prices shall be completed as per attached pricing structure Appendices A

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Arrie Crous	Mechanical Maintenance Manager
Abel Vuma	Maintenance group manager
Vincent Khumalo	Senior Technical Supervisor

5. Revisions

Date	Rev.	Compiler	Remarks
August 2021	05	L Makwarela	Due for revision
September 2020	04	L Makwarela	Due for revision
May 2018	03	L Makwarela	Due for revision
September 2015	02	S Byroo	Due for revision
July 2013	01	MS Letebele	First Issue

6. Development Team

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

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7. Acknowledgements

Not Applicable