Eskom	Scope of work	Generation

Title: **Scope of work for**

Kendal C&I maintenance resources contract (Units and Outside plant)

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Content

1. Introduction

This document covers the scope involved in the Control & Instrumentation maintenance contract for Kendal Power Station to ensure a high degree of co-operation between the Employer and the Contractor.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to stipulate the main activities that shall be required from the Contractor when performing C&I maintenance on the following plant areas:

- Units plant
- Outside plant
- Water treatment plant

2.1.2 Applicability

This document is applicable to Kendal power station.

2.1.3 Effective date

This document is effective from the date of authorisation.

2.2 Normative/Informative References

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

2.2.1 Normative

[1] **ISO 9001:** Quality Management Systems

[2] **240-53114002:** Engineering Change Management Procedure

[3] **240-56355731:** Environmental Conditions for Process Control Electronic Equipment used at Power Stations

[4] ***1016870:** OPS Manager: control simulations work instruction

2.2.2 **Informative**

None

2.3 Definitions

Term	Description
Automation system	A set of integrated technologies, software and hardware designed to control and perform tasks automatically with minimal human intervention.
Field Equipment	Equipment in the field that supplies or receives a signal, for a device that either controls or monitors. For example (Press SW, Press TX, Level SW, Level TX, Flow SW, Flow TX, Temp SW, Temp TX, Analysers, Opacity meters, Vibration Monitors, Gas Analysers, Detectors, Gauges. Including Generator bearing vibration systems, Thermocouples, RTD and Pyrometers.
First/1st line maintenance	Maintenance required on specific part of plant where the Contractor must do fault finding up to the point where the signal path from the equipment to the DCS can be ruled out as being the problem.
Full maintenance	Maintenance where the Contractor is required to work on the equipment to the point where the equipment is back to normal operation
Green Line	Cable placed around a conveyor belt, for safety purposes (Pull wire) and could be used to trip the conveyor belt in any circumstances.
Plant	All systems that form part of Kendal Power Station.
PG Unit	Mobile engineering station

2.4 Abbreviations

Abbreviation	Description
AC	Alternating Current
AP	Appointed Person
BFP	Boiler Feed Pump
C&I	Control and Instrumentation
CEP	Condensate Extraction Pump
CCTV	Closed Circuit Television
DC	Direct Current
DCS	Distributed Control System
DST	Deaerator Storage Tank
ESP	Electrostatic Precipitators
FD	Forced Draught Fan
FFFR	Fossil Fuel Firing Regulations
GO	General Outage
HP	High Pressure
ID	Induced Draught Fan
IR	Interim Repairs
LCS	Local Control Station
LP	Low Pressure
LV	Low Voltage
MCWP	Main Cooling Water Pump
MV	Medium Voltage
MNT	Maintenance

Abbreviation	Description
OEM	Original Equipment Manufacturer
OM	Opportunity Maintenance
OP	Outside Plant
OHS	Occupational Health and Safety
PA	Primary Air Fan
PLC	Programmable Logic Controller
PSR	Plant Safety Regulations
QCP	Quality Control Procedure
RTD	Resistance Temperature Detector
RTS	Return to Service
SAP	Systems Applications and Products
SHEQ	Safety, Health, Environment, Quality
SSC	Submerge Scrapper Conveyor
SOW	Scope of Work
SO3	Sulphur Trioxide Plant
SW	Switch
SWG	Standard Wire Gauge
TX	Transmitter
V	Volt
WTP	Water Treatment Plant

2.5 Roles and Responsibilities

Department	Responsibility
C&I Engineering	Responsible for drafting the scope for the maintenance contract.
C&I Maintenance and Contracts department	Responsible for acquiring the C&I maintenance Contractor for Units and Outside plant as per the terms outlined in this SOW.
Procurement	Responsible for ensuring that the procurement process is followed correctly in establishing the C&I maintenance contract for Units and Outside plant.

2.6 Process for Monitoring

The Eskom Procurement process shall be utilized to establish the contract.

2.7 Related/Supporting Documents

None

3. Scope of work

3.1 Scope overview

The Contractor shall be responsible for maintenance of all field instrumentation at Kendal Power Station according to the prescribed employer's standards; apart from systems that are maintained by their OEMs. Where the OEM contract exists, the Contractor shall be responsible to do 1st line maintenance. The Contractor is expected to have full knowledge of systems mentioned on the below table and proof of such knowledge.

Table 1.1: Kendal Power Station plant systems for the purpose of the maintenance contract

Plant	Plant Systems
Boiler system	*Boiler & auxiliaries*
	Boiler Protection system including flame scanners, Hydra steps and Pyrometers.
	Feed water system including BFP's, HP & LP heaters, DST
	Sootblower control system
	Electrostatic Precipitators
	Oil Burner management *Including Burner tilt, fuel oil integrators and Aux air dampers*
	SO3 Plant
	Milling plant
	Draught group including vibrations
	Fuel oil plant
	HP bypass system
	PA flow
	Tube leak detection
	Boiler Oxygen analysers
Turbine system	*Turbine Control and protection system*
	Turbine Turbovisory system
	Turbine Auxiliaries
	CEP's, Condensers, Elmo pumps
Condensate system	*Cooling towers and MCWP's*
Main Cooling water	*Seal oil and level probes*

Emissions:	*Emission Monitoring: Gas and Dust monitoring*
Coarse Ash Plant control system including coarse ash conveyor, Apron, Sicon, transverse & SSC.	*SSC Agitation pumps*
Unitised and Forced cooling Compressors	*Instruments, local panel, cables and etc*
H2 Plant including Unitised H2 Dryers	*Instruments, local panel, cables and etc*
Gas Turbines	*Instruments, local panel, cables and etc*
Unitised and Sub East Equipment rooms	*All modules and cabling in the rooms.*
Water Treatment Plant	*Cables, cable racks, cable strapping on the racks, solenoid operated valves, local control panels, transmitters, controllers, analysers and any other C&I work including outage work*
Crossover plant	*Instruments, local panel, cables and etc*
Sewage plant	*Instruments, local panel, cables and etc*
Common Plant	*Coal Plant, Ash plant, Auxiliary Systems, Low Pressure Systems (LPS), Bulk Fuel Oil Plant, Sulphur Plant, Dust Handling plant, Clean and Dirty, Outside Ash and Reservoirs.*

3.2 Scope details

3.2.1. Maintenance to be performed shall be inspection, calibration, loop checking, stroke checking, function checking, repairing, removing, replacing and testing of field instrumentation of all C&I related plants at Kendal Power Station.

3.2.2. The Contractor shall be responsible for the maintenance of the total control and field instrument system that is working on 24V and 48V. This shall also include any circuits that work on voltages at and less than 220V AC and 220V DC.

3.2.3. The Employer must authorise any equipment changes or plant modifications. In all cases even if there is a need to move equipment, change equipment or add equipment.

3.2.4. The Contractor shall render service with no additional cost, for any tests required by other Contractors representing Maintenance at Kendal Power Station, and Kendal Power Station permanent staff.

3.2.5. The Contractor shall render a service to the Outage management department (with permission from the Contract Manager) during outages and any other related work at no additional costs.

3.2.6. The Contractor Site supervisor shall report directly to the C&I Maintenance Manager/ Contract Manager, for the day-to-day issues.

3.2.7. The Contractor Site Manager shall report directly to the C&I Maintenance Manager/ Contract Manager, for as and when required.

3.2.8. The Contractor must perform function checks and Calibration on the entire field Instruments, and the Calibration Sheet must be filled; and both Eskom and the Contractor shall have copies of such for filing.

3.2.9. The Contractor shall maintain the environmental conditions where the C&I equipment operating in the Sub-stations and Equipment rooms as specified in procedure 240-56355731[3].

3.2.10. The Employer shall supply all the spares needed by the Contractor to execute the scope at hand. However, after a proper fault finding has been performed and demonstrated the need for replacement of the instrument as the last resort.

3.2.11. The Contractor must assist at no additional costs other than provided in this contract, in terms of commissioning of all new plants and maintenance on new handed over plant after a modification.

3.2.12. The Contractor must assist with modifications which arise from an equipment change due to the currently used equipment being obsolete at no additional costs.

3.2.13. The Contractor must perform Stroking of all the Actuators that are Auma, Rotork, Siemens, AEG, Limit Torque and/or any other actuator that is installed at Kendal Power Station.

3.2.14. All documents generated in the course of executing work on behalf of the Employer in accordance with this contract to be filed and stored appropriately, and to be made available for audit purposes as and when required. Calibration certificates, QCP's and any other documents the Employer might require.

3.2.15. The Contractor to perform the re-commissioning requirements after GOs, IRs and OMs.

3.2.16. The Contractor shall ensure that all his employees are authorised in terms of the Fossil Firing Fuel Regulation (FFFR) and Plant Safety Regulations (PSR). The contractor to ensure that all Artisans and Technicians are fully authorised on PRS within the 1st six months after the commence of the contract. At commencement of contract, at least 50% of employees must begin the FFFR authorisation process immediately. The remaining Unauthorised employees on FFFR shall be given a period of six months from contract placement to gain authorisation. Failure to adhere to the stipulated timelines, shall lead to 10% of the monthly contract payment being deducted per month until 100% employees are authorised.

3.2.17. All C&I documents (either on softcopy or hardcopy) in Eskom's possession, which is required for plant operation and maintenance purposes shall be made available to the Contractor and the contractor shall adhere to all the intellectual property rights.

3.2.18. Any tools required for maintenance work shall be supplied by the Contractor as per the minimum Mechanician standard tools (Appendix A). Workshop tools utilized by the Contractor with permission from the Employer are to be maintained and kept safe. If they are lost while in the possession of the Contractor, they shall be replaced by the Contractor.

3.2.19. The Employer shall provide two-way radios which the Contractor shall take responsibility of any loss or damages (while in their possession) and shall be returned at the end of the contract.

3.2.20. All transportation requirements required by the Contractor for his employees shall be provided for by the Contractor.

3.2.21. The Contractor shall ensure that time and attendance register are signed daily by his employees (Time-in and Time-out for the day). The attendance registers to submitted to the employer weekly for verifications.

3.2.22. Contractor to utilize the Eskom C&I Maintenance workshops; no need for site establishment.

3.3 Minimum requirements of staff

3.3.1 Supervisor should hold National Diploma or National N: Diploma in Electrical Engineering, Control Instrumentation, have a minimum of 3 years' Supervisor related work experience and must have a power plant or related field experience, a minimum of 3 years. Proof of qualifications, Academic record and CVs shall be attached.

3.3.2 Technicians should hold National Diploma or National N: Diploma in Electrical Engineering, (Control Instrumentation), have a minimum of 3 years' experience in a power plant or related field experience. Proof of qualifications, Academic record and CVs shall be attached.

3.3.3 Artisans/Mechanician should hold N4 and Trade test certificates in Control and Instrumentation and a minimum of 3 years' experience in a power plant or related field experience. Proof of qualifications, Academic record and CVs shall be attached. (4 x artisans for OP, 11 x artisans for Units).

3.3.4 Safety Officer should hold National Diploma in Safety Management, NQF 5 SAMTRAC Certificate with Incident Investigation Level 3, First Aid Level 3; must have a minimum of 3 years' safety related experience on any industrial site.

3.3.5 Resources required:

Resource	**Quantity**
Supervisor	1
Artisan/Mechanician	15
Technician	4
Safety Officer	1
Total	21

3.4 Field Instrumentation

3.4.1 **Routine Work**

3.4.1.1 All the simulations shall be managed as per the local procedures [4].

3.4.1.2 The Contractor shall be responsible for Hot and Cold Commissioning after outages and mill services, and shall make people available for all opportunity maintenance, Unit light up and shutdowns when requested.

3.4.1.3 The Contractor shall perform Unit plant fault finding from primary element up to and including the relevant DCS modules.

3.4.1.4 Replacing relevant DCS and PLC modules, system fault finding from primary element up to and including relevant module.

3.4.1.5 The Contractor shall be responsible for the Stroke checking of all electrical actuators, binary & control, setting of appropriate limits feedback and position feedback (Including cabling from equipment room to value, and equipment room to first point of termination in SWG).

3.4.1.6 All pneumatic valves, stroke check and adjusting of pneumatic positioners where needed (including tubing on valves).

3.4.1.7 The Contractor shall be responsible for the Soot blower system maintenance of the pressure switches, gauges and transmitters.

3.4.1.8 The Contractor shall be responsible for the maintenance of the Tube leak detection system microphones and MUX box computer.

3.4.1.9 The Contractor shall be responsible for the maintenance of the Gas analysers and Dust monitors (Clean, repair and calibrate).

3.4.1.10 The Contractor shall be responsible for the unit plant binary & analogue signals on the following plants: Blow down sump, SSC, Course Ash, Apron, Sicon, Diverter Chutes, Fuel oil station, Propane gas, Unitised compressors (Kaiser), Force cooling Compressors, CW System and H2 Plant, Gas turbine, Sulphur plant, coal and ash, fuel oil plant, water treatment plant, Condensate polishing plant, sample analysers.

3.4.1.11 The Contractor shall be responsible for the Sequence trip testing of all coal and ash conveyor belts.

3.4.1.12 The Contractor shall be responsible for the Boiler and Auxiliaries which consists of all binary & analogue signals including electrical & pneumatic actuators and dampers (Windbox dampers and burner tilts).

3.4.1.13 The Contractor shall be responsible for the Turbine and Auxiliaries which consists of all binary & analogue signals including electrical & pneumatic actuators.

3.4.1.14 The Contractor shall be responsible for the Step & Sub-group control and Sequencing control of all signals from the primary elements to DCS.

3.4.1.15 The Contractor shall be responsible for the correcting of faulty alarms from primary element up to DCS modules; as well as clearing all disturbances on the DCS.

3.4.1.16 The Contractor shall be responsible for all C&I Maintenance coils of solenoid valves and electrical circuits on the systems.

3.4.1.17 The Contractor shall be responsible for investigating the function and reliability of primary elements.

3.4.1.18 The Contractor shall be responsible for the Units' plant Coarse Ash sequence testing from primary element up to appropriate PLC, DCS or system defined module.

3.4.1.19 The Contractor shall be responsible for all the appropriate controllers or systems used on the field at all Coal and Ash conveyors belts (all conveyor belts protections systems).

3.4.1.20 The Contractor shall be responsible for all the temperature compensating cables and associated elements.

3.4.1.21 The Contractor shall be responsible for the simulation of signals with the necessary written authorisation, control and removal of simulations as soon as possible. The authorisation shall be acquired via the OpSuite FLIP System.

3.4.1.22 The Contractor shall be responsible to maintain an acceptable access control system in C&I restricted areas where installed.

3.4.1.23 The Contractor shall be responsible for all the connectors, junction boxes, LCS and any other similar device used in the field.

3.4.1.24 Routine maintenance includes daily plant walks to confirm the plant condition and to identify and address visible faults/ disturbances in equipment room. All defects or potential failures shall be recorded. Performance of plant in operation is monitored by the Contractor.

3.4.1.25 The Contractor must complete all preventative maintenance within the time span given. Where Permit to Work is required, the work shall be planned with the AP.

3.4.1.26 The Contractor is expected to form part of the departmental planning weekly meeting. Contractor must submit a plan for significant emergency maintenance work. Emergency maintenance lesson learned and standby activities lesson learned to be shared in the morning/ toolbox meetings on a daily basis.

3.4.1.27 The Contractor must complete all notifications within the given time span, according to SAP system and Work management prioritization guide (classification of notification priority 01, 02, 03). The Contractor must generate notifications on Flip system when needed or required (defects and corrective maintenance). Where Permit to Work is required, the work shall be planned with the Appointed Person.

3.4.1.28 Corrective, planned and preventative maintenance shall be prioritized with the emphasis on the corrective maintenance or according to the priority.

3.4.1.29 All C&I equipment must be maintained according to the philosophies and recommendations of the OEM's or Eskom. Changes to the philosophies must be authorized by Eskom.

3.4.1.30 The Contractor shall deliver quality maintenance according to the Kendal Standard Quality Control Procedures (QCP's shall be drawn up for all work to be performed by the Contractor).

3.4.1.31 The primary elements on the MV and LV switchgear shall be from the last termination point in the switchgear including the cabling to the DCS. This shall also include the terminations in the actuators, situated inside the actuator termination box.

3.4.1.32 The calibration and maintenance of all temperature switches, temperature transmitters, pressure switches, pressure transmitters, level switches, level transmitters, analysers, analyser pick-ups (non-laboratory equipment), flow switches, flow transmitters, solenoid coils, thermocouples, RTD's and gauges, that operates on less than 220V AC and 220V DC.

3.4.1.33 The removal and replacement of spares (disposal if requested) of all temperature switches, temperature transmitters, pressure switches, pressure transmitters, level switches, level transmitters, analysers, analyser pick-ups (non-laboratory equipment), flow switches, flow transmitters, solenoid coils, thermocouples, RTD's, gauges, vibration pick-ups and limits, that operates on less than 220V AC and 220V DC.

3.4.1.34 The Contractor shall be responsible for the turbine, exciter and generator thermocouples fault finding, removal, installation, repairs, loop checking and testing.

3.4.1.35 The Contractor shall be responsible for the installation of all compensating cabling that would be required on the complete plant.

3.4.1.36 The Contractor shall be responsible for all the alarms that are fed through the DCS system and alarms that are fed with a voltage at or less than 220V AC and 220V DC.

3.4.1.37 The Contractor shall perform maintenance on the bearing vibration system (BFP's, ID's, FD's, PA's, CW's, Auxiliary Cooling Fans, and Turbine)

3.4.1.38 The Contractor shall perform maintenance on the total control system operating at/or less than 220V AC/DC.

3.4.1.39 The Contractor shall perform maintenance on the oil burner system maintenance.

3.4.1.40 All pneumatic controllers and valves, stroke check and adjustment of controllers where needed (including tubing on controllers up to first point of isolation away from controller).

3.4.1.41 Soot blower system controls and limits operating at or less than 220V AC and 220V DC.

3.4.1.42 The Contractor shall be responsible for the ESP, SO3 plant, dust and gas monitors, the control and calibration of appropriate instruments and circuits.

3.4.1.43 The Contractor shall be responsible for all solenoid valve coils on units and outside plant at or less than 220V AC and 220V DC, power to the coil and operation of the coil.

3.4.1.44 Instrumentation will be removed and replaced by the Contractor when requested by mechanical group when work has to be done to prevent damaged on the instrument.

3.4.1.45 All tubing and C&I pipe work on instruments will be done by the Contractor.

3.4.1.46 The Contractor shall be responsible for the commissioning, investigation of faults and clarification of problem areas.

3.4.1.47 The Contractor shall supply a service free of charge to the mechanical sections (fault rectification, fault finding, and calibration of gauges etc. that concern instrumentation and the effective operation of the station).

3.4.1.48 The Contractor shall supply a service to the Boiler, Turbine, Milling, Common Plant, Water Treatment Plant, and other plant sections where necessary/ needed.

3.4.2 **Outage Related Work**

3.4.2.1 The Contractor shall provide staff to work on Outages, Interims Repairs or GOs. The Contractor shall release staff from Maintenance duties to work on the Outage and plan as far as possible around these activities. The releasing of staff from maintenance duties shall not compromise maintenance activities. The Contractor is to ensure that duties of the staff released to Outages is covered by the staff remaining for Maintenance services.

3.4.2.2 The Contractor shall provide staff to work on different types of Outages when notified by Eskom and shall prepare the suitable plan for the duration of the Outage.

The Outage types are:

I. *OP - Opportunity Maintenance outage* varies between 10 – 21 days and it is coordinated by Outages and executed by Maintenance staff

II. *IR- Interim Repairs outage*: duration is 35 days, and it is coordinated by Outages and executed by Outages staff

III. *GO- General Overhaul outage*: duration is 160 days, and it is coordinated Outages and executed by Outages staff.

3.4.2.3 QCP's shall be drawn up by the Contractor for the agreed activities between the Contractor and Eskom including Hold and Inspection points. Eskom shall accept and approve the QCP's for all plants.

3.4.2.4 The Contractor and Eskom personnel shall always represent Eskom in all the Outage meetings. The Contractor to gives feedback of activities or issues raised during the Outage meeting daily. Eskom personnel to lead in all Outage activities.

3.4.2.5 The Contractor in conjunction with the Employer shall draw up an Outage plan as part of the scope. The main aim of the Outage is to restore the plant to a higher level of integrity. The Contractor shall perform all the work according to the scope of work for the different plant areas within the duration of the Outage.

3.4.2.6 The aim of the Outage scope of work is to ensure that the plant is available and reliable when the Unit is returned to service, with the least impact on production and business performance.

3.4.2.7 The Contractor along with Eskom personnel shall provide a populated Plant pre-shutdown Checklist to Outages per plant area to be worked on during the outage.

3.4.2.8 The Contractor along with Eskom personnel shall inspect the plant systems that were worked on during the Outage before the Unit is returned to service and ensure that the plant is in an operable state and will not cause unnecessary delays.

3.4.2.9 If an Outage related defect is known, spares must be identified by the Contractor and made known to the Employer, so the Employer can procure or reserve immediately, so that the defect can be rectified on opportunity outage.

3.4.2.10 The Contractor and Eskom personnel shall be available for Hot and Cold Commissioning; and assist with tests on the Boiler & Turbine protection and safety systems as well as on the Outside plant and Water Treatment plant tests.

3.5 Cabling

3.5.1 The Contractor shall be responsible for cabling by pulling in and out any type, Length (Distance) and any size (Thickness) of new cabling which is C&I related and termination from a Junction box, Cubicle to the instrument or Local control panel. The Employer will supply the cable, and the Contractor shall execute the activity at no extra cost.

3.5.2 The Contractor is responsible for reporting any damaged to all C&I cabling with a voltage at or less than 220V AC and 220V DC to Eskom personnel and be able to do replacement and termination when required. This includes all the terminations up to and including the primary elements.

3.5.3 The Contractor is responsible for all C&I tubing removal and replacement where needed or requested by Eskom.

3.6 Spares Management

3.6.1 The Employer will supply all the Spares needed by the Contractor to execute the scope at hand.

3.6.2 The Contractor in conjunction with the Employer shall identify critical spares and submit a list detailing them. When identifying the spares, the Contractor shall keep in mind the need to minimise production risk due to spares unavailability, and also the need to avoid wasteful expenditure of public funds in terms of PFMA by holding too much spares than is necessary. The risks involved shall be listed with appropriate solutions. This action should be a joint effort between Contractor and the Employer.

3.6.3 The Contractor is to be aware that the spares are the property of the Employer.

3.6.4 If Spares are not available at the Eskom stores, The Contractor with approval of Eskom, may, make temporary measures at the plant to minimise either the risk of injury to personnel or plant damage, or load loss or unit trip.

3.7 Workshops and Test Equipment

3.7.1 The Contractor with the permission of Eskom supervisor may utilise the Workshop. The Contractor will then be responsible for the costs of the any damage to workshop and test equipment.

3.7.2 The Contractor to provide their own fluke multimeter (177) with valid SANAS calibration certificate and standard toolbox. The multimeter must be calibrated yearly and calibration certificate must be filed.

3.7.3 The Portable electrical equipment register shall be kept and updated by the Contractor. All tests done by the Contractor must be done according to Eskom regulations and standards, both the Contractor and Eskom must have copies of such as proof of the tests for filing.

3.7.4 Test equipment and computers will be supplied by Eskom. The equipment is seen as the property of Eskom. The Contractor will maintain and keep it in good working state, any losses or damages of such equipment shall be on the Contractor's costs. Any theft of such equipment should be reported to the Eskom personnel as well as to the Eskom security service within 24hrs of realisation for formal investigations to be done, all negligence declared cases shall be on the Contractor's account.

3.7.5 The Contractor's Fluke Multimeter should be checked and tested frequently by Eskom representative, according to Eskom standards and sent for calibration at a national accredited source (SANAS), the Contractor to give a list of all test equipment which will expire every 3 months before their expiry date for calibrations, failure to do so, a monetary penalty shall be charged to the Contractor which will be negotiated as that might have a production loss implication.

3.7.6 The Contractor is responsible for the repairs on test equipment whereby the damages are done by his employees.

3.8 Hours of Work

3.8.1 Normal Working Hours

3.8.1.1 The Employer requires onsite maintenance during normal working hours, Standby and call-out service for any abnormal events and problems during non-normal working hours. This should not have a negative impact on any of the performance indications of the station. The normal working hours is from 07H15 to 16H30, Mondays to Thursdays excluding public holidays. Lunch is between 12H00 and 12H30. On Fridays the working hours is from 7H15 to 12H15. The Time sheets are to be signed on arrival and departure in the employer's office. Non-adherence to these working times can result in penalties to the contractor.

3.8.1.2 All Leaves taken by Contractor's employees will be on the Contractor's account. The Contractor must always have 100% coverage of available resources. Eskom will not pay for any absenteeism.

3.8.1.3 The Contractor grants leave to his employees subject to the Employer's business requirements. If the Employer's business requirements so demand, the Contractor withdraw or postpone already granted leave to ensure sufficient resources

3.8.1.4 Shift allowance shall also be catered for by the Contractor.

3.8.2 Overtime

3.8.2.1 Work executed outside working hours on Mondays to Saturdays, 1.5 will be paid to the employee's wage/hourly rate for every hour worked

3.8.2.2 Work executed on Sundays and Public holidays, double the employee's wage/ hourly rate will be paid for every hour worked

3.8.2.3 Employees will only be allowed to book for work executed outside of working hours not more than 7hrs a day during the week, not more than 24 hours on weekends and 60 hours a month.

3.8.2.4 The scheduled 12 hours coverage crews and the outage crew during outages, will use the planned overtime form when on duty.

3.8.3 Standby

3.8.3.1 The Contractor's Standby crew is to be available at all times (24 hrs 7days a week). The Standby crew is to be competent on the plant and authorized to act as Responsible persons on permits and be able to carry out simulations if authorised.

3.8.3.2 The Contractor will be expected to change from normal working time to shift work, as and when the Employer requires for the Contractor to do so. The payment conditions for this must be negotiated.

3.8.3.3 The Standby crew's reaction time in emergencies should be as quick as possible (1 hour). The Contractor will provide the Employer with a standby roster with the contact details of the person on standby.

3.8.3.4 Call-outs will be according to SAP prioritisation, all call outs should be accompanied by a notification number with a priority 1 on it, any notification which is not a priority 1 should be planned and be done under planned work unless such notification cannot be done during the day and arrangements with Eskom supervisor were done to execute it out of normal operating hours.

3.8.3.5 The Contractor's proposed standby roster should be submitted to Eskom at least a month prior to the standby month. The Employer has a right to influence and make changes on the Standby Roster; any changes done by Contractor, on the list should be communicated to Eskom, and reasons given. The final standby roster will be compiled by the Eskom supervisors.

3.8.3.6 The normal Contractor's maintenance standby crew should consist of 2 persons and shall be available on call-out always free from drugs and alcohol and shall report to control room within I hour of a call. Their full contact details and phone numbers should be given on the standby list. If there is a deviation on this matter it should be agreed by Eskom representative.

3.8.3.7 Contractor Supervisor will work overtime only if given written authorisation by the Eskom Contract service manager is given, overtime worked without written authorisation shall not be paid.

3.8.4 Outage hours

3.8.4.1 Outage management department shall be responsible for remunerating for normal working and overtime hours worked during an Outage. Shift allowance shall also be catered for.

3.8.4.2 The normal outage working hours is from 07H00 to 19H00, Mondays to Sundays including public holidays. Lunch is between 12H00 and 12H30 and rest period between 16H30 and 17H00.

3.8.4.3 During a Unit recommissioning the Contractor staff shall be working shifts Mondays to Sundays including public holidays:

I. Day shift hours from 07H00 to 19H00 [Lunch is between 12H00 and 12H30 and rest period between 16H30 and 17H00].

II. Night shift hours 19H00 to 7H00. [Rest period between 00H00 and 00H30].

3.9 Safety, Quality and Environment Training

3.9.1 The Contractor shall ensure that all technicians/ Mechanician or artisans and have the following SHEQ training with proof prior to commencement of the contract; if training could not be done prior then the Contractor shall be given a period of six months from the contract commencement to train its employees; Failure to adhere shall lead to the Contractor to be removed from Kendal premises with immediate effect. The Contractor shall also be liable to train their employees for any other SHEQ/ Quality/ Environment training which might arise from audit findings, regulation changes, legislation amendments; new Eskom requirement which was not there before etc.

NOTE: SHEQ training Matrix: The below is a list of training to be done within the above stipulated time frames.

Training course	**Supervisor**	**Safey Officer**	**Technicians**	**Artisans**
Plant Safety Regulations	X	X	X	-
Incident Investigations	X	X	X	-
HIRA	X	X	X	X
Job Observations	X	-	-	-
Re-Induction	X	X	X	X
Environmental Systems	X	X	X	X
Oil Management	X	X	-	-
Waste Management	X	X	X	X
Confined Space	X	-	X	X
PPE	X	X	X	X
Working at Heights	X	X	X	X
SHE Systems orientation	X	X	X	X
Noise awareness	X	X	X	X
Asbestos Awareness	X	X	X	X
Fire Extinguisher Handling	X	X	X	X

Emergency preparedness/ Planning for Evacuation	X	X	X	X

3.9.2 Site facilities allocated to the Contractor. The Contractor is responsible to keep it clean and up to NOSA & Eskom standards. All changes to the workspace shall become the property of Eskom and shall remain so until on termination of the Contractor's service.

3.9.3 The Contractor attends the daily production meeting and all C&I related meetings as requested by Eskom as the Eskom C&I representative. Contractor to have his own Safety meetings and attend meetings where requested. (Meetings should be according to Eskom standard regulations).

3.9.4 The Contractor provides all personal safety equipment as stipulated by Eskom safety procedures.

3.9.5 Contractors to be LV and HV regulations authorized.

3.9.6 Induction shall be done by all Contractors.

3.9.7 The Contractor must provide on-job training/ skills transfer to those nominated by Eskom.

3.9.8 Contractor should work according to Eskom guidelines, NOSA & OHSA.

3.9.9 Safety inspections to be done by Eskom, or an Eskom appointed party. SHEQ meetings shall be held by the Contractor; records of the meetings to be filed and made available to Eskom as and when required.

3.9.10 Contractor to anticipate and cooperate in any audit or investigation that would involve C&I.

3.9.11 The Contractor uses the Employers' facilities which are the telephones, computers and printers. External Telephone expenses shall be on the Contractor's account.

3.9.12 The Contractor shall be responsible to ensure that skills transfer and training take place to ensure long term sustainability.

3.9.13 All C&I work that does not fall within the requirements of the permit to work system, must be executed under the limited access register.

3.9.14 All simulations, disablements and temporary adjustments must be recorded and approved in accordance with the "Out of Normal Condition" procedure.

3.9.15 The Employer's temporary operating instructions must be used in the event of events, which are not covered by an existing work instruction or procedure, or to cater for a particular plant condition which is unique and not likely to re-occur.

3.9.16 The Employer shall negotiate with the Contractor all the key performance indicators to establish a performance-based contract.

3.9.17 All Contractors should adhere to security rules and regulations and access permits shall be issued by security.

3.9.18 The Contractor can make use of medical facilities, but the cost shall be on the Contractor's account.

3.9.19 KKS coding and pipe colour coding as per the Eskom standard is to be applied at all times.

3.9.20 The Contractor is to adhere to the site quality regulations.

3.9.21 The behaviour of the Contractor should be professional and ethical as per the Eskom code of conduct and ethics procedure at all times. Failure to comply with Eskom's requirements in this regard could lead to removal of the Contractor or the removal of the guilty employee from the site.

3.9.22 The Contractor should be environmental ISO 14001 compliant. All substances that are used must be environmentally friendly. The Contractor should adhere to all environmental regulations.

3.9.23 The Contractor shall ensure adherence to all Kendal Power station Safety procedures, processes and requirements at all times. This includes the yearly medical screening of his employees, which should be done prior to the expiration date. The Contractor should also adhere to SHEQ regulations at all times, failure to do so shall lead to the Contractor removed from Kendal power station premises**.**

3.10 Exclusions from the Contractor's scope of work and Eskom assistance

3.10.1 All maintenance on telephone lines is excluded.

3.10.2 Eskom shall supply an area for the Contractor to establish his site on Kendal Power station premises.

3.10.3 Eskom documentation centre is available for information for Contractor.

3.11 Boundaries between Instrumentation and Electrical

3.11.1 C&I Contractor shall be responsible for all cabling with voltage at or less than 220V AC or 220V DC.

3.11.2 C&I Contractor shall be responsible for the terminations up to the primary elements.

3.11.3 The primary elements on the MV and LV switchgear shall be up to the last termination point in the switchgear including the cabling to the DCS.

3.11.4 This shall include all the appropriate terminations in the actuators situated inside the actuator termination box; the stroke checking of the actuators and the necessary changes to the limits.

3.11.5 The calibration of all temperature switches, Temp TX, pressure switches, Press TX, level switches, Level TX, analysers, analyser pick-ups (non-laboratory plant equipment), flow switches, Flow TX, solenoid coils, thermocouples, RTD, (all primary plant in its entirety). That is at or less than 220V AC or 220V DC.

3.11.6 The removal and replacement of spares, as temperature switches, Temp TX, pressure switches, Press TX, level switches, Level TX, flow switches, Flow TX, solenoids, thermocouples, RTD, vibration pick-ups, limits, (all primary plant in its entirety). That is on a voltage less than 220V AC or 220V DC.

3.11.7 C&I Contractor shall be responsible for the generator thermocouples from the DCS up to the junction box closest to the generator thermocouple through bushing.

3.11.8 C&I Contractor shall be responsible for all compensating cables that would be required on the complete plant.

3.11.9 C&I Contractor shall be responsible for all alarms that are feeding through the DCS system that are fed with a voltage less than 220V AC or 220V DC.

3.11.10 C&I Contractor shall be responsible for bearing vibration systems, support if required.

3.11.11 Control and Instrumentation to render a free of charge service to Electrical section.

4. Acceptance

This document has been seen and accepted by:

Full Name and Surname	Designation
Mapule Madingoane	C&I Maintenance Manager – Units
Lammie Maree	C&I Maintenance Manager – OP & WTP
Motlatsi Ntjana	C&I Maintenance Supervisor – Units
Sibongile Xaba	C&I Maintenance Supervisor- WTP
Abram Ndimande	C&I Maintenance Supervisor - OP
Thabo Mdhluli	C&I Outage Controller
James Van Der Nest	C&I Tech Support Senior Advisor
Oosie Oosthuizen	C&I Tech Support Senior Advisor
Nico Labuschagne	C&I Tech Support Principal Technician
Super Ncongwane	C&I Tech Support Senior Advisor
Noma Kwele	Maintenance manager
Zanele Maleka	Outage Execution Manager
Thabo Magagula	C&I Engineer – Outside Plant
Teboho Moleli	C&I Engineer - WTP
Yolisa Motsepe	C&I Engineering Manager
Phindile Takane	Engineering Manager

5. Revisions

Date	Rev.	Compiler	Remarks
June 2026	1.0	M. Matlaila	Section 3.1 was amended because the simulations are addressed on Sections 3.4.1.1, 3.4.1.21 and 3.9.14. The Resource requirements needed to be stipulated on Section 3.3.5. Section 3.9 SHEQ training matrix was amended. Addition of Appendix A: Mechanician Standard Tool List.
August 2025	0.0	M. Matlaila	Initial draft of the document.

6. Development Team

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

- Angie Motlatla
- Sibongile Xaba
- Thabo Mdluli

7. Acknowledgements (if applicable)

None.

APPENDIX A: MECHANICIAN STANDARD TOOL LIST

Mechanician Standard Tool list
Long nose/Piler
Water pump piler
Stanley knives
S/D Small flat 4mm
S/D Big flat 6mm
S/D Small Star
S/D Big star
Terminal S/D
Allen Keys
Fluke multimeter
Torch
Brush
Side cutter
Shifting 10”
F/R Spanner 8mm
10mm ring flat
13mm ring flat
17mm ring flat
19mm ring flat
10mm ring flat
2-Way radio
Crimping tool
Jewelers S/D
Tool bag