

	Specification	Kusile Power Station
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Title: **Kusile Power Station Ablution Facilities During the Planned Outages, Unplanned Outages on an “as and when required” Basis for the period of (5) years**

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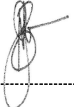



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1. Introduction

Kusile Power Station Management has taken a decision to outsource the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages on an as and when required basis to a suitably qualified, experienced, and well established Contractor.

Each station should have its own basin, soap dispenser and built-in paper towel dispenser. Its crowd pleaser should be capable of accommodating nearly 230 Uses without refilling and with amenities which include 2 soap dispensers and 2 built-in top mounted paper towels dispensers.

This document describes the detail of the applicable plant areas, scope of work, standards, quality, requirements, specifications, terms & conditions as well as the criteria to qualify for the tender.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to define the specified scope of work activity requirements for Kusile Power Station. The station is expected to perform at 92% UCF, 6% PCLF and 2% UCLF, and the specified portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour to be installed on Boiler, Turbine and Balance of Plant (BOP) different levels at Unit 1 to 6 during Outages on an as and when required basis activities and management strategy efforts must support this requirement. It is therefore imperative that the successful and suitably qualified Contractor aligns his/her organisation fully to these specified scope activities and processes laid down in this document.

2.1.2 Applicability

This document shall apply throughout Eskom Kusile Power Station Units and associated BOP that are commercially operational.

2.1.3 Effective date

Document is effective upon authorization.

2.2 Normative/Informative References

2.2.1 Normative

- i. ISO 9001 Quality Management Systems
- ii. OHSACT Occupational Health and Safety Act, 85 of 1993

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2.2.2 Informative

Not Applicable

2.3 Definitions

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

2.3.2 Employer: Eskom, Kusile Power Station

2.3.3 Employer Representative: Any person appointed in writing by Employer as the delegated Employer representative in terms of the provisions.

2.3.4 Plant: Any structure, machinery, apparatus or equipment which does not fall within the scope of the operating regulations for high voltage systems, and excludes, mobile, portable lifting equipment, domestic circuits' appliances and tools.

2.4 Abbreviations

Abbreviation	Description
OEM	Original Equipment Manufacturer
PCLF	Planned Capability Loss Factor
QCP	Quality Control Plan
SOW	Scope of Work
UCF	Unit Capability Factor
UCLF	Unplanned Capability Loss Factor
SSC	Submerged Scrapper Conveyor
QA	Quality assurance
QC	Quality Control
NDT	Non Destructive Testing
PCM	Process Control Manual
BOP	Balance Of Plant
M/L	Meter Level

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2.5 Roles and Responsibilities

2.5.1 The Employer

The responsibilities of the Employer include the following:

- a. Inform and issue the Contractor with the updated outage plan
- b. Ensure the SOW is issued to the Contractor in time to allow planning for the Outage
- c. Performance is measured by the Employer against those areas which contribute to the Employer's business and the Contractor shall be compensated accordingly as per the agreed contract clauses. (E.g. Reliability, Availability and Safety).
- d. Areas of measurement include the Employer's key business indicators and will be redefined from time to time.
- e. The Employer and Contractor in this SOW is committed towards the following;
 - i. Retention of critical skills
 - ii. Continuous cost reduction
 - iii. Health & Environment Safety
 - iv. Transfer of operational experience and skills

2.5.2 The Contractor

The responsibilities of the Contractor include the following:

- a. Comply with the Employer's Environmental, Health and Safety standards, policies and procedures.
- b. The Contractor is to ensure that any service rendered does not interfere with the Employer's scheduled work and should align himself/herself with the Employer's work control management process.
- c. 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.
- d. 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.
- e. The Contractor shall employ a competent person who will be responsible to Supervise all the work with regards to this SOW
- f. All works will be subject to anytime inspection by the Employer.
- g. The Contractor shall take cognisance of the fact that the contract start date can deviate.
- h. The Contractor to provide resources required to execute this scope and any changes to the crew must be negotiated and agreed upon with the Employer.

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- i. This contract is for outage SOW and any other breakdowns that the Contractor will be required to perform within the scope boundaries of this contract.
- j. Spillage is viewed to be very important for plant housekeeping and any spillage caused as a result of the natural incident during the Outage shall be cleaned.
- k. The Contractor to provide equipment and tools required for the works
- l. The Contractor shall participate in improvement programs as stipulated by the employer.
- m. Contractor vehicles to comply with Eskom Vehicle Standards and Procedures.
- n. During Outages it is expected that the contractor will provide on-site representation on a 24 hour basis, seven days a week if required. Shift times: 07h00 to 19h00, 19h00 to 07h00 or whichever times that will be agreed between two parties.
- o. All additional personnel and scope of work to be clarified with the Employer prior to work being done.
- p. Will be required to comply with the Employers process control manuals (PCM) that outlines the outage processes.
- q. Ensure that the toilets are cleaned twice a day in the morning 07:30 and afternoons during shifts change over at 18:00 or any other times that will be agreed with Employer
- r. Drainage and disposal of septic tank whereby suck out and clean the contents of septic

2.5.3 Re-Commissioning

Not applicable for this type of service

2.5.4 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 all outage related meeting which may be daily, weekly or monthly.
- c. The Contractor to be represented at all Employer safety meetings.
- d. The Contractor to be represented at any ad-hoc meetings that may arise in order to address any outage planning, execution, finalisation or safety related matters.
- e. Liaison meetings shall be held with the Employer's Representative or his/her delegate on as and when required basis to discuss any technical details, or concerns.

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2.5.4.1 Contractor’s management, meetings and key people

- 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. Cleaning Machine
 - v. Dapper Truck
 - vi. Light driven vehicle (LDV)
- d. The Contractor shall be responsible for the regular inspections and daily equipment checks of the mobile equipment and vehicles including record keeping while onsite.

2.5.4.2 Communication and Correspondence

- a. All correspondence includes but not limited to:
 - 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 or as per the agreed contract terms.
- c. All communications from the Contractor are numbered sequentially with a prefix as advised by the Employer. The prefix and numbering system is decided upon at the Inaugural meeting.

2.5.5 Quality and Documentation Control

- a. During the tender process a quality criteria will be defined that the Contractor must comply to.

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- b. The Contractor to comply with the Employer's quality documentation management system and processes.

2.5.6 Project Implementation

- i. Site establishment
- ii. Activities
- iii. Manpower plan (Resource loaded)
- iv. Organogram
- v. Skills required and associated cost per skill (e.g. Supervisor, site manager, etc.)

2.5.7 Manpower Requirements

- a. The number of personnel required to execute the works is to be proposed by the Contractor after his/her contractor 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 experience in the technical aspects of this SOW and supporting teams.
- c. The Contractor ensures that all staff being brought onto Kusile site has a valid fitness certificate based on the specified plant man-job specification.
- d. Provide daily supervision of all related plant through trained and competent personnel to ensure that inspections & work activities are conducted daily during execution of the outage.

2.6 Process for Monitoring

Process will be agreed by both parties per Task Order and according to Outage process control manuals and the specific outage SOW.

2.7 Related/Supporting Documents

N/A

3. Document Content

3.1 Works information

3.1.1 Outage Philosophy

The FGD and PJFFP maintenance regimes drive the Outage philosophy. Consideration has been made for the Turbine and Generator operational running hours.

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Based on the physical evidence of the performance of the FGD plant and plant failures, it has become evident that the outage philosophy has to be reviewed and modified to ensure that no obvious failures occur which will result in unplanned loss of production. Since the operation of FGD in 2017, the FGD has never operated fully for 18 months as per the URS/ contract without any plant failures even though it has managed to meet the emission control design limits. The Outage Philosophy is as depicted on the diagram below.

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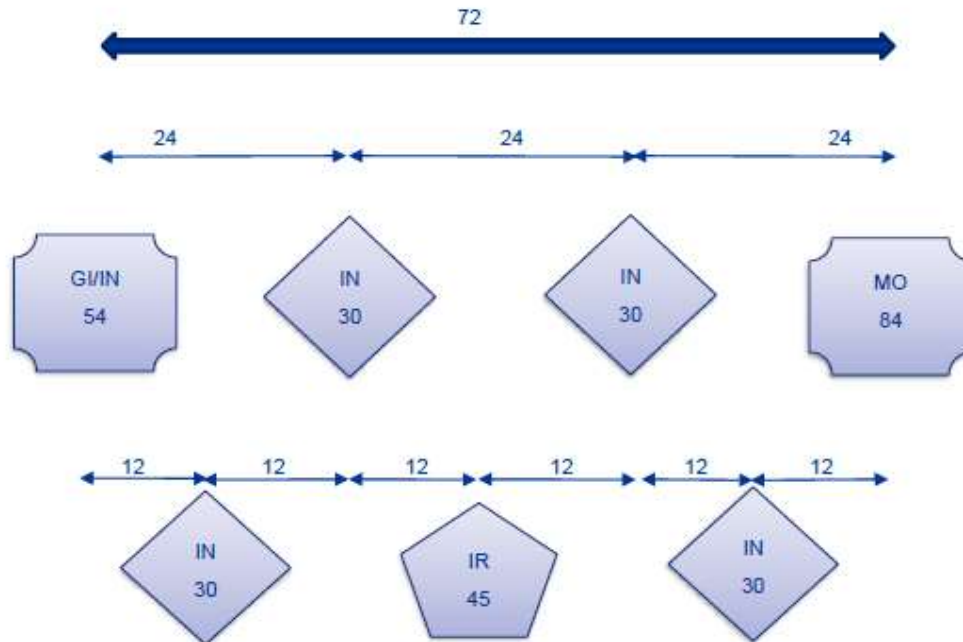


Figure 1: Kusile Outage Philosophy

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Expected operating period between major overhaul of equipment is as reflected by the table below:




Symbol	Outage type	Interval Years	Interval Hours	Duration (days)	Main activities
	IN	1	8333	30	Boiler and Draught Group Inspection Mill bin Inspection Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment
	IN	2	16666	30	Boiler and Draught Group Inspection Mill bin Inspection Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment
	IR	3	25000	45	LP Bypass Valves Inspection and repairs Boiler and turbine auxiliaries inspection and repairs Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment
	MGO	6	50 000	84	HP and IP turbine cylinders full refurbishment. LP cylinder and Valves overhaul Boiler statutory inspections Generator stator and rotor inspections Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment
	GO	12	100 000	84	HP, IP, LP Turbine cylinders and Valves overhaul Air heater element packs will be replaced every 12 years Boiler statutory inspections Absorber, Inlet & Outlet Duct, Emergency Quenching Nozzles, Mist Eliminators, Oxy-Blower and Reaction Tanks - Cleaning, Inspection and Refurbishment

Table 1: Outage Intervals

Assumptions used to derive the philosophy are as follows:

- The Outage durations will be from Breaker Open to Breaker Close.
- It is envisaged that any Guarantee Inspections (GI) as a result of contractor (OEM) requirements will be done during the scheduled Outages.
- Fabric Filter Bag changes will coincide with the scheduled outages, if on-load change proves to be a challenge.
- Based on the current operational experience within the Eskom's fleet, it has been envisaged that a 12 500 hours boiler tube survey for the inspections and minor repairs on the boiler pressure parts and ducting is required due to the anticipated higher erosion rates.
- Full commissioning and capability testing will be done after every equipment overhaul as required by the codes and standards for different plant areas.

3.2 Applicable S.O.W

The SOW for this contract is detailed as follows:

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Kusile Power Station Management has taken a decision to outsource the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages on an as and when required basis to a suitably qualified, experienced and well established Contractor.

The portable restrooms which include flush units should conform to SABS South Africa standards and designed to suit our specification and needs. These portable toilets should also be manufactured from UV-resistant grade 4, high density polyethylene plastic. They should also be designed to withstand severe handling and harsh weather conditions.

Each station should have its own basin, soap dispenser and built-in paper towel dispenser. Its crowd pleaser should be capable of accommodating nearly 230 Uses without refilling and with amenities which include 2 soap dispensers and 2 built-in top mounted paper towels dispensers

The portable toilets for the industry which include flush units, urinal stations, hands, liquid hands wash soaps, toilet papers and chemicals to minimize odour station to be installed on Boiler, Turbine and Balance of Plant (BOP) different levels at Unit 1 to 6 during Outages on an as and when required basis. The toilets will be lifted up to these areas with the permeant goods lifts and winches installed on site

The sewage will be dispose at Eskom authorised sewage disposal site

The Ablution facilities/restrooms to be cleaned twice a day in the morning 07:30 and afternoons during shifts changeover at 18:00

3.3 Specifications

Toilets	Description	Values
----------------	--------------------	---------------

- | | |
|-----------------|-------------|
| • Weight empty | 76kg |
| • Tank Capacity | 210/approx. |
| • Seat Height | 51 cm |

Internal

- Dimensions (L/D/H) 100X100X212

External

- Dimensions (L/D/H) 106X106X233cm
- Material Used High density grates 4, polyethylene. Anti UV Treatment

Number of uses 230

Colours Any colour

Handwash	Description	Values
-----------------	--------------------	---------------

- | | |
|------------------------|---------|
| • Weight | 157cm |
| • Width | 67cm |
| • Depth | 54cm |
| • Weight full | 115.2kg |
| • Fresh water capacity | 83L |

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- Gray water Capacity 91L

Number of uses 230 without refilling and with amenities which include 2 soap dispensers and 2 built-in top mounted paper towels dispensers

Urinal Station Description Values

- It should be three (3) Station Urinal, it assists in reducing queuing times and it should be easily be lifted to higher levels

The service provider Supervisor needs to be available to give a Contract Manager a feedback or note of all the concerns in the Outage Department with the state toilet cleanliness.

The toilets to be positioned at the following locations:

3.4 Boiler

3.4.1 Boiler Plant

The plant will need the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odors during Outages in the following areas

- i. Economiser
- ii. Reheater 2 meter level (m/l)
- iii. Superheater 3 meter level (m/l)
- iv. Zero meter level next to the SSC

3.4.2 GAH

The plant will need the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages in the following areas

- GAH 10 and 20 area 28 meter level (28m/l)
- Burners area 16 meter level (16m/l)

3.4.3 Draught Group

The plant will need the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages in the following areas

- ID fan 10 and 20 zero meter level Area (0m/l)

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3.4.4 Pulse Jet Fabric Filter Plant

The plant will need the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages in the following areas

- The cells area

3.5 Turbine Plant

3.5.1 Turbine Centreline

The plant will need the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages in the following areas

- turbine centreline area at 9 meter level (9m/l)
- Turbine area at zero meter level (0m/l)

3.6 Auxiliaries Plant

3.6.1 Balance of the plant (BOP) Area

The plant will need the portable toilets for the industry which include flush units, urinal stations, hands wash stations, liquid hands wash soaps, toilet papers and chemicals to minimize odour during Outages in the following areas

- Bottom Ash Hopper area
- FGD Absorber

Please note the Contractor shall provide everything else necessary for providing the Service and also provide any necessary cleaning service might be required within Kusile Power Station Premises as per the Contract Manager instruction.

3.7 Special Conditions

- i. There is high dust levels on the plant
- ii. Other contractors and Eskom employees needs access to the boiler and Turbine Plant
- iii. The service is from 100 meter level to 0 meter level on boilers, Balance of the plant (BOP), turbine Area, the work involves working at heights sometimes
- iv. Heat stress consideration during summer times
- v. Rotating equipment (i.e. turbine, motors, GAH, Pumps might be on barring or rotating)
- vi. Electrical Circuit might be alive

3.7.1 Exclusions

- i. Scaffolding and Insulation
- ii. Civil Maintenance

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- iii. Supply of spare
- iv. Rigging Activities

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Siyabonga Mahaye	Middle Manager Outages
Grace Olukune	Engineering Group Manager
Ntsiki Hlapisi	Outage Execution Manager

5. Revisions

Date	Rev.	Compiler	Remarks
June 2024	2	M Ngwane	Contract Renewal
August 2020	1	Maruping Tshehla	1 st issue

6. Development Team

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

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France Mabula “Project Co Ordinator Outage Management “

Maruping Tshehla “Senor Advisor Outage Management “

7. Acknowledgements

Kusile Power Station Outage Management

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