

	<b>Scope of Work</b>	<b>Kusile Power Station</b>
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## **1. Introduction**

This document specifies the user requirements for the testing and reporting of coal and Ash qualities for Kusile Power Station. The quality analysis and reporting apply to both commissioning and operational coal and ash. This document does not seek to replace the long-term coal and Ash quality management as planned in the station's URS.

The original Kusile Power Station URS specifies that a station coal laboratory shall be provided by Group Capital department. Such laboratory shall be fully equipped with both coal and limestone quality testing and analysing equipment.

## **2. Supporting Clauses**

### **2.1 Scope**

The scope entails coal, ash, and limestone analysis at Kusile coal contracted laboratory. Samples shall be sealed and transported to the Contractor's laboratory where analysis shall be conducted. Quality results shall be reported to the Employer on a period not exceeding 48 hours from the time of sampling. The service rendered as per this scope is not fixed but will be requested on the "as and when required basis".

#### **2.1.1 Purpose**

The activity is aimed at providing accurate and traceable quality information as coal, ash and limestone is delivered to the Power Station stockyard. The service includes reporting on coal, ash and limestone qualities during commissioning, optimization, and operation of both boiler and FGD plants. Plant guarantees and warranties are subject to correct product feed as such consistent quality monitoring and reporting are critical.

#### **2.1.2 Applicability**

This document is applicable to the following plant area:  
Kusile Chemical Services.

#### **2.1.3 Effective date**

This document shall be effective upon conclusion of negotiations with the identified party.

## **2.2 Normative/Informative References**

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

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### 2.2.1 Normative

- [1] ASTM C25-06 Standard test methods for chemical analysis of limestone, quicklime, and hydrated lime.
- [2] ISO 9001: 2015 Quality Management Systems - Requirements

### 2.2.2 Informative

- [1] Kusile Power Station SHE Specifications
- [2] ISO 17025: 2017 General requirements for the competence of testing and calibration laboratories

### 2.3 Definitions

- (i) **Agent:** A company or Individual acting under the instruction of the Principal Contractor
- (ii) **Employer:** Refers to Eskom's Kusile Power Station
- (iii) **Principal Contractor:** Refers to service provider in partnership with Employer.

### 2.4 Abbreviations

Abbreviation	Explanation
ADT	Ash Diffusion Temperature
CSY	Coal Stockyard
CQMP	Coal Quality Management Plan
CaCO <sub>3</sub>	Calcium Carbonate
ERI	Eskom Rotek Industries
FGD	Flue Gas Desulphurisation
LAR	Limited Access Register
MgCO <sub>3</sub>	Magnesium Carbonate
NTS	Nominal Top Size
SiO <sub>2</sub>	Silicon Oxide
SHE	Safety Health and Environment
SANAS	South African National Accreditation System
SOW	Scope of Work
URS	User Requirement Specification

### 2.5 Roles and Responsibilities

- (i) The Contractor shall, always, ensure adherence to the detail contained in this document. The service rendered must cover the full scope of work as per this document.
- (ii) Contractor to execute duties safely, timeously and cost efficient.

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- (iii) The Chemical Services Manager shall ensure that all changes relating to or having an effect on this document are captured and all affected parties informed of such.
- (iv) Chemical Services Manager to specify coal and limestone quality parameters to be tested and reported as part of the scope.
- (v) Chemical Services Manager to provide all applicable documentation as per 1.4.1 and 1.4.2 normative and informative to the contractor.

## **2.6 Process for Monitoring**

Adherence to safety and environmental compliance shall be monitored against this document as well as the SHE specification document. Safety and Environmental audits are carried out on a regular basis for awareness and to enforce good operational governance.

## **2.7 Related/Supporting Documents**

- (i) Coal Quality Management Procedure: 4600053716
- (ii) Chemical Services quality manual 240-126584964
- (iii) Coal Quality Specifications for Eskom Power Stations 240-71273834

## **Coal Quality Monitoring and Reporting**

Coal quality parameters to be analysed and reported are tabled below.

- (i) Calorific Value (MJ/kg)
- (ii) Ash Content %
- (iii) Total Moisture %
- (iv) Inherent Moisture %
- (v) Sizing %
- (vi) Hardgrove Grindability Index
- (vii) Total Sulphur %
- (vi) Abrasive Index (mgFe/4kg)
- (vii) Volatiles %

Turnaround time for quality reporting is 48 hours. Parties to agree on the acceptable reporting format, document signatory and mode of communicating the results. Reports to stipulate the measurement basis.

The laboratory shall retain the duplicate reference sample for a period of two (2) weeks.

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## **2.8 Limestone Quality Monitoring and Reporting**

Limestone quality parameters to be analysed and reported are listed below. Samples shall be transported to the Contractor's laboratory for preparation and analysis. Results shall be reported within 48 hours of product sampling.

Where samples must be transferred for temporary storage, a container with a lid must be used to preserve the integrity of the sample.

The analysis of the Limestone shall be conducted utilizing X-ray fluorescent spectrometer (XRF) and the following analysis shall be conducted:

- (i) Calcium Carbonate ( $\text{CaCO}_3$ )
- (ii) Magnesium Carbonate ( $\text{MgCO}_3$ )
- (iii) Silica Dioxide ( $\text{SiO}_2$ )
- (iv) Aluminium Oxide ( $\text{Al}_2\text{O}_3$ )
- (v) Iron-Oxide ( $\text{Fe}_2\text{O}_3$ )
- (vi) Size grading
- (vii) Moisture
- (viii) Density for weight determination
- (ix) Density for volume determination
- (x) Bond work Index

## **3. Ash Quality Monitoring**

Ash quality parameters to be analysed and reported on daily basis. Performance and Testing Department will do daily sampling from the cegrits samplers and samples shall be transported to the Contractor's laboratory for analysis. Results shall be reported within 48 hours of product sampling. Where samples must be transferred for temporary storage, a container with a lid must be used to preserve the integrity of the sample.

Ash quality parameters to be analysed and reported are tabled below:

- (i) Carbon-in refuse/Cegrits

### **3.1 Laboratory Compliance and Accreditation**

It is expected that the Contractor's laboratory shall adhere to the best principles and practices of the industry. Such shall be demonstrated through compliance to regulatory bodies such as SANAS and accreditation documents shall be made available to the Client. The contractor is expected to be accredited with SANAS ISO 17025: 2017 on all the analysis contained on this SOW.

The Client will, on a regular basis, audit such compliance and should the results of such an audit show non-compliance, the Client reserves the right to terminate the service relationship.

Laboratory accreditation and associated costs are the responsibility of the Contractor. Should such accreditation be at risk, the Contractor is obliged to inform the Client of such and furnish Client with mitigation interventions?

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### **3.1.1 Performance Management and Reporting**

The Contractor must compile a detailed method statement on performing the tasks as specified in this document. Upon review of such method statement, the Client may make amendments and recommendations. Such amendments and recommendation shall be included in this document prior to acceptance by both parties.

Performance rating will be based on adherence to agreed turnaround time for quality results, sampling accuracy (non-bias) as well as the Contractor's safety profile. The details of the stipulated performance criterions shall be agreed between the two parties prior to conclusion of the service agreement.

Some of the key operational reports that the Contractor needs to provide include:

- (i) daily safety talk
- (ii) daily inspection or equipment check sheet.
- (iii) safety file
- (iv) daily production performance reports
- (v) safety and environmental incidents and near misses
- (vi) safety performance including detailed periodical statistics.

The level of detail and frequency of reporting will be mutually agreed by the Client and the Contractor. Prescribed reporting frequencies may change from time to time on request by the Client.

### **3.1.2 Safety Risk Management**

The Contractor carries primarily the responsibility and accountability for the health and safety of his/her employees and his/her sub-contractors within their specified working area, as contemplated by Section 37(2) of the OHS Act. The Contractor shall have a documented safety management system e.g. occupational Health and Safety Plan, Safety Policy, Safe Working Procedures and Legal Appointments.

None of the additional safety requirements specified by the Client/Agent reduces the Principal Contractor's responsibility and accountability for the health and safety of his employees and sub-contractor employees within his working area. The Contractor takes full accountability for costs specific to health and safety.

To control and manage above, the SHE file shall be compiled, kept up to date and readily available for inspection.

The Contractor shall ensure that the performance of all specified work is supervised throughout the contract period, by competent appointed representatives who have experience in the type of work specified.

**Note:** No work may commence and or continue without the presence of appointed supervisor appointees during performance of the contracted work. Where the appointed Supervisor is not available, a designate stand-in must be appointed.

The Contractor shall provide a list of names and contact telephone numbers of all his employees as well as the sub-contractor employees on site.

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The Contractor shall keep a record of all employees including the sub-contractor's employees, including date of induction; health records, relevant skills and licences, and be able to produce this list at the request of the Eskom Project Manager/Representative. These records shall be filed in the SHE File.

The Contractor shall ensure that Supervisors give clear and unambiguous instructions for the work in hand to the personnel for whom they are responsible for.

The instructions shall include, but not necessarily be limited to:

- (i) Description of the objective/scope of work
- (ii) Sequence of work/method statements
- (iii) Hazard identification and risk assessment (prior to commencement of work)
- (iv) Precautionary/preventative measures that are to be taken to minimise risk and where possible eliminate risks
- (v) Identification of sensitive features that may be impacted upon by his activities
- (vi) Process for the reporting of incidents/accidents including investigation and implementation of corrective action

Issuing of employee personal protective equipment is the accountability of the Contractor except where corporate branding by Client is a requirement. Contractor to always maintain hygienic standards and presentation.

### **3.1.3 Environmental Management**

- (i) The Principal Contractor shall have a documented environmental management system e.g. environmental policy, operational procedures relating to their activities, aspects/impacts register. The afore-mentioned environmental management system shall be implemented as per the Client's requirements.
- (ii) The contractor shall prepare an environmental management plan relating to their planned operational activities. The environmental management plan shall be based on, amongst others, Kusile Power Station's OEMP and any other applicable environmental legislation.
- (iii) The Principal Contractor employees shall be inducted on the environmental requirements as per these documents.
- (iv) The Principal Contractor shall comply with all Kusile Power Station environmental requirements such as policies, standards and procedures.
- (v) Method statements shall be submitted for approval by Kusile Power Station's Contract Manager prior to commencement of work activities. No work shall commence without an approved method statement.
- (vi) Non-conformance and incident reporting and investigations shall be done by the Contractor, such reports must include but not limited to the following information:
  - (a) The cause of the non-conformance/incident
  - (b) The proposed actions to correct and prevent recurrence.
- (vii) The Project Manager shall issue non-conformances where there are deviations from Kusile Power Station Procedures and any other environmental requirements.
- (viii) Costs associated with environmental requirements and compliance are the full responsibility of the Contractor.

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#### **4. Acceptance**

#### **5. Revisions**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
February 2024	4	R.L. Mogola	This document is the 4 <sup>th</sup> issue. <ul style="list-style-type: none"><li>• Preparing for new contract</li></ul>
March 2018	3	M. Mokwena	This document is the 3 <sup>rd</sup> issue.
August 2017	2	M. Mokwena	This document is the 2 <sup>nd</sup> issue.
February 2016	1	N. Nxumalo	This document is the 1 <sup>st</sup> issue.

#### **6. Development Team**

#### **7. Acknowledgements**

None

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**Appendix A – Coal and Ash analysis Price list**

<b>Description of activity</b>	<b>No of samples</b>	<b>Unit price</b>	<b>Total price</b>
Sample preparation	17280		
Proximate analysis: Ash } Inherent Moisture } Volatiles }	17280		
Calorific Value	17280		
Total Sulphur	17280		
Ash Fusion Temperature	17280		
Abrasive Index	11280		
Hard Groove Index	11280		
Total moisture	11280		
Screening X7 sizes (50mm, 40mm, 25mm, 12.5mm, 6.3mm, 3mm, and 1mm)	11280		
Cegrits Analysis	22080		

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**Appendix B – Limestone Analysis Price List**

<b>Description of activity</b>	<b>No of samples</b>	<b>Unit price</b>	<b>Total price</b>
Sample preparation	1826		
XRF) analysis, CaCO <sub>3</sub> , MgCO <sub>3</sub> , SiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , Fe <sub>2</sub> O <sub>3</sub>	1826		
Screening (19mm, 16mm, 9.5mm,5.6mm,)	1826		
Total Moisture	1826		
Density for weight determination	60		
Bond Work Index	60		
Density for volume determination	60		

**Note:**

The prices must be excluding VAT  
Indicate the applicable CPA indices and base date

\_\_\_\_\_  
**Supplier Name representative**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

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