| Eskom | Scope Of Work | Kriel Power Station Generation |
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| Title: | **Kriel Power Station Provision of Ash Dams Maintenance Services for a Period of 5 Years Scope of Work** | Unique Identifier: | **555-EAP2003** |
| | | Alternative Reference Number: | **N/A** |
| | | Area of Applicability: | **Engineering** |
| | | Documentation Type: | **Scope of Work** |
| | | Revision: | **1** |
| | | Total Pages: | **11** |
| | | Next Review Date: | **As required** |
| | | Disclosure Classification: | **CONTROLLED DISCLOSURE** |

| Compiled by | Supported by | Functional Responsibility | Authorized by |
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| Date: 23/02/2022 | Date: 2022/02/23 | Date: 23.02.2022 | Date: 2022/02/24 |

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# TABLES

# 1. INTRODUCTION

The proposed scope of work is the provision of maintenance services for Low Pressure Pumping (LPS) at Kriel Ash Dam complex ( Dam 1 , 2 , 3 ), Slurry Plant , AWR , Cut 1 , Cut 2, Overland booster Station Pump A and B, Wing dams and Ducks pond not limited to. This includes all associated piping (ring main and all pumping suction and discharge pipework) network and auxiliaries, all associated electrical and control instrumentation. These systems are required to have a high availability in order to enable the safe deposition of ash on the Kriel Ash dam complex. A contract for the for the provision of ash dam maintenance services for a period of 5 years on an as and when required basis hence needs to be put in place.

# 2. SUPPORTING CLAUSES

## 2.1 SCOPE

This document covers the maintenance requirements in the form of a scope of work for the provision of ash dam maintenance services on Kriel ash dams.

### 2.1.1 PURPOSE

The purpose of this document is to provide technical details to be adhered to whenever there is sourcing of Kriel ash dams maintenance services.

This document is intended to be the input to the NEC Part 3: Scope of Work.

### 2.1.2 APPLICABILITY

This document is applicable to Kriel Power Station material handling Ash plant maintenance and engineering sections.

## 2.2 NORMATIVE/INFORMATIVE REFERENCES

### 2.2.1 NORMATIVE

[1] ISO 9000: Quality Management Systems.

[2] Applicable Drawings

| | |
|---|---|
| 12255-4-08-4-050 | Ash dam 3 discharge line - Site layout |
| 12255-4-08-4-051 | Ash dam 3 discharge line - Pipe assembly details |
| 12255-4-08-4-052 | Ash dam 3 discharge line - Discharge point assembly details |
| 12255-4-08-4-053 | Ash dam 3 discharge line - Discharge point fabrication details |
| 12255-4-08-4-054 | Ash dam 3 discharge line - Bend fabrication details |
| 12255-4-08-4-055 | Ash dam 3 discharge line - Line fabrication details (1) |
| 12255-4-08-4-056 | Ash dam 3 discharge line - Line fabrication details (2) |
| 12255-4-08-4-057 | Ash dam 1&2 discharge line - Site layout |
| 12255-4-08-4-058 | Ash dam 1&2 discharge line - Pipe assembly details |

| | |
|---|---|
| 12255-4-08-4-059 | Ash dam 1&2 discharge line - Discharge point assembly details |
| 12255-4-08-4-060 | Ash dam 1&2 discharge line - Discharge point fabrication details |
| 12255-4-08-4-061 | Ash dam 1&2 discharge line - Bend fabrication details (1) |
| 12255-4-08-4-062 | Ash dam 1&2 discharge line - Bend fabrication details (2) |
| 12255-4-08-4-063 | Ash dam 1&2 discharge line - Line fabrication details (1) |
| 12255-4-08-4-064 | Ash dam 1&2 discharge line - Line fabrication details (2) |
| 12255-4-08-4-065 | Ash dam 2 slope 1&2 discharge line 1&2 assembly details (1) |
| 12255-4-08-4-066 | Ash dam 2 slope 1&2 discharge line 1&2 pipe bend fab details |
| 12255-4-08-4-067 | Ash dam 2 slope 1&2 discharge line 1&2 pipe fab details (1) |
| 12255-4-08-4-068 | Ash dam 2 slope 1&2 discharge line 1&2 pipe fab details (2) |
| 12255-4-08-4-069 | Ash dam discharge lines cross-over assembly details |
| 12255-4-08-4-070 | Cross-over pipe bend fab details |
| 12255-4-08-4-071 | Cross-over pipe fab details |
| 12255-4-08-4-072 | Ash dam-Access ramp details |
| 12255-4-08-4-073 | Ash dam discharge lines cross-over-Isometric details |
| 12255-4-08-4-074 | Ash dam discharge lines along slopes 3, 4 and 5 |
| 12255-4-08-4-075 | Ash dam 2 discharge line bend fab detls (3) |
| 12255-4-08-4-076 | Ash dam 2 - slopes 3, 4 and 5 bend fab detls |
| 12255-4-08-4-077 | Ash dam 2 discharge line fab detls (3) |
| 12255-4-08-4-078 | Ash dam 2 discharge line fab detls (4) |
| 12255-4-08-4-079 | Ash dam 2 - slopes 3, 4 and 5 line fab detls |
| 12255-4-08-4-080 | Ash dam discharge line pipe support Layout details |
| 12255-4-08-4-081 | Ash dam discharge line pipe support 1 and 2 details |
| 12255-4-08-4-082 | Ash dam cross-over extension lines pipe and bend fab dtls |
| 12255-4-08-4-083 | Ash dam cross-over extension lines assembly details |

### 2.2.2 INFORMATIVE

Not applicable.

### 2.3 DEFINITIONS

**Table 1: Definitions**

| Definitions | Description |
|---|---|
| | |

### 2.3.1 DISCLOSURE CLASSIFICATION

**Controlled Disclosure:** Controlled Disclosure to external parties (either enforced by law, or discretionary).

### 2.4 ABBREVIATIONS

| Abbreviations | Description |
|---|---|
| AKZ | Anlagen Kenn Zeichnungs |
| MT | Main Turbine |
| OHSA | Occupational Health and Safety Act |
| P&ID's | Piping and Instrumentation Diagrams |
| QC | Quality Control |
| QCP | Quality control program/plan/procedure |
| SHE | Safety, Health & Environmental |
| SHEQ | Occupational Safety, Health, Environmental, and Quality |
| SOW | Scope of Work |
| MBTF | Mean Time Between Failures |

### 2.5 ROLES AND RESPONSIBILITIES

Roles and responsibilities are as follows:

- N/A

## 3. THE *WORKS*

The *works* is the provision of Ash Dam (Maintenance Services to Kriel Power Station Ash Dam Complex.

### 3.1 BACKGROUND

### 3.2 DESCRIPTION OF THE *WORKS*

The *works* is the provision of Ash Dam (Maintenance Services to Kriel Power Station Ash Dam Complex

#### 3.2.1 SCOPE

- The works is for the provision of maintenance services :
    - Planned maintenance as per the Ash Dams Maintenance Strategy PMT's
    - Corrective maintenance actions
    - Opportunity maintenance or outages
    - Install, overhaul and refurbish Centrifugal and Submersible Pumps
    - Install, overhaul; refurbish Valves
    - Install, overhaul; refurbish motors

- Management of workshop services (Inventory spares management, Materials management , Tools and equipment)
- Install, remove, weld and fabricate pipes
- Ash line wall thickness testing
- Pumps installations and alignment
- Rigging of heavy equipment
- Maintaining of the entire ring feed system for the Ash Dam 1, 2 and 3
- Execution of the ash dams Mechanical Maintenance strategy as per the PMT's
    - Valves
    - Pipes
    - Submersible pumps
    - Centrifugal Pumps
    - Pump bases and frames
    - NRV's
    - Pipe manifolds
    - V-belts,
    - Pulleys
    - Plummer blocks,
    - Top and Bottom jackshafts
    - All associated electrical and C&I instrumentation i.e. Motors and VSD's
- Elevation of ash line/ ash distribution points in the ash dam complex on the basis of rate of rise of the ash dam as per instruction issued by the operating team or the engineer
- Fabrication and installation of bends and spool pieces as per the drawings referenced in section 2.2.1
- Plant 1st line troubleshooting and investigation ( Valves, Pipes, Submersible pumps , Centrifugal Pumps, V-belts, Pulleys , Plummer blocks, Top and Bottom jackshafts associated electrical and C&I instrumentation i.e. Motors and VSD's)
- Development of work packages as per the plant relevant PMT ( Valves, Pipes, Submersible pumps , Centrifugal Pumps, V-belts, Pulleys , Plummer blocks, Top and Bottom jackshafts associated electrical and C&I instrumentation i.e. Motors and VSD's) Workshop management works (Ash Dam workshop Works)
- Spares management inline with the Eskom Stores relevant procedure and SAP system (Spare withdrawal, book backs, handling and storage)
- Works management System, planning of PM's and Defects (P1, P2, P3 and P4) as per the relevant works management procedure
- Water management maintenance activities
- Daily plant walks and assessment to develop daily plant status and risks with mitigations
- Any out of scope as allocated by the contracts manager

**Maintenance of the following areas**

- Slurry pumps, including all piping network and piping auxiliaries (from the pumps to the ash dams) and motors and all associated electrical and control & instrumentation equipment
- AWR pumps, including piping network (suction pipes from the low level dams (wing dams) to the pumps, discharge pipes from AWR pumps to high level dams (HLE) in the station and booster pumps at the ash dams) and motors and all associated electrical and control & instrumentation equipment
- AWR flight sump pumps, including all piping network and piping auxiliaries (from the AWR sump to the low level dams (wing dams)) and motors and all associated electrical and control & instrumentation equipment
- Booster pumps, including all piping network and piping auxiliaries (from the pumps to the overland conveyors discharge points, including the spar nozzles) and motors and all associated electrical and control & instrumentation equipment
- Flight pumps at overland conveyor belt drive house sumps, including all piping network and piping auxiliaries (from the pumps to the ash dams) and motors and all associated electrical and control &instrumentation equipment
- Duck ponds and Cuts 1 & 2 pumps, including piping network and piping auxiliaries (from the pumps to the low level dams (wing dams)) and motors and all associated electrical and control & instrumentation equipment
- Duck ponds and Cuts 1 & 2 pumps floating rafts structures
- Cleaning of overland conveyor belts A and B

### 3.2.2 GENERAL REQUIREMENTS OF THE WORKS:

The general requirements of the works include the supply and delivery of various Ash plant components as per section 3.2.3

### 3.2.3 THE CONTRACTOR WILL PROVIDE THE FOLLOWING SERVICE

- The *Employer* reserves the right to supply information which may be required by the *Contractor* in the satisfactory execution of the required *Works Information*.
- The *Contractor* to carry out Quality Control activities by performing physical inspections in Maintenance and Opportunity Outage works as per the *Employer's* specifications.
- The basic outline resource/skills structure for the *Contractor* to fulfil the employers Scope :

| | Maintenance |
|---|---|
| Site Manager, National Diploma , Mechanical Engineering , 5 + yrs experience | 1 |
| Safety Officer | 1 |

| | |
|---|---|
| Trade Tested Mechanical Fitter | 4 |
| Trade Tested Boiler-Maker | 2 |
| Trade Tested Welder | 4 |
| Trade Tested Electrician | 2 |
| Semi-Skilled workers | 6 |
| High-up Truck Operator | 1 |
| Supervisor , Grade 12 , Trade Tested Fitter , 5 + yrs experience | 1 |

- All inspections done by the *Contractor* should be in accordance to *Employer's* requirements

- Contractor will provide:
  - Documentation that verifies that the work performed meets the minimum standards established by the specifications.
  - Monthly activity reports to indicate their involvements in the daily running of the power station and interface with the relevant department.
  - Monthly presentation to management on continual improvement and area of concern/risks.
  - Strive to minimise rework and save cost.
  - Conduct and Provide report on Supplier/Contractor quality internal Audits.
  - Develop a training program in conjunction with the Business Process. Design and deliver a successful training program that enhances employee's skills. Offer on the job and awareness training

### 2.4.2 Deliverables

- **Documentation** that verifies that the work performed meets the minimum standards established by the specifications.
- **Monthly** activity reports to indicate their involvements in the daily running of the power station and interface with the relevant department.
- **Monthly** presentation to management on continual improvement and area of concern/risks.
- Strive to minimise rework and save cost.
- Conduct and Provide report on Supplier/Contractor quality internal Audits.
- Develop a training program in conjunction with the Business Process. Design and deliver a successful training program that enhances employee's skills. Offer on the job and awareness training

### 2.4.3 Contractor to adhere to the following:

- Interfacing with others is necessary and will occur on an on-going base.
- PSR Regulation, all trade tested artisan to be authorised
- OHS Act 85 of 1993
- Declaration of Interests as per Eskom standard

### 3.2.4 DOCUMENTATION SUBMISSION AND RECORDING

N/A

### 3.3 STANDARDS, SPECIFICATIONS AND PROCEDURES

All material and equipment shall be new and of the standard and quality specified. The design and manufacture of equipment and the complete installation shall be carried out and tested in accordance with the latest issue or amendments of the following Standards and Regulations, as applicable:

**Table 2: Relevant Standards and Codes**

| Document Number | Title |
|---|---|
| **Eskom Standards** | |
| 240-30008949 | Safety, Health and Environmental Specifications for Contractors |
| 240-55944466 | Supplier Contract Quality Requirement's Specification |
| QM 58 | Supplier Contract Quality Requirements |
| | |
| **General Standards** | |
| ISO 9001 | Quality Management Systems. |
| OSH Act 85 of 1993 | Occupational Health and Safety Act and Regulations Act 85 of 1993. |

## 4. AUTHORISATION

This document has been seen and accepted by:

| Name | Designation |
|---|---|
| Malusi Mlaba | System Engineer |
| Jason Bennet | Civil Engineer Ash Dams |
| Nonhlanhla Mposula | Senior Supervisor : Bulk Materials Handling |
| Sizwe Buthelezi | Engineer In Training : Bulk Materials Handling |
| Solly Masogo | Ash and Coal Manager |
| Nthabiseng Sejane | Maintenance Materials Handling Manager |
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| Lungile Gumbi | Group Maintenance Manager |

## 5. REVISIONS

| Date | Rev. | Compiler | Remarks |
|---|---|---|---|
| January 2022 | 1 | Malusi Mlaba | 1St Draft |