Eskom	Generic Scope of Work	Matimba Power Station

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CONTENTS

Page

1. INTRODUCTION 3

1.1 BACKGROUND 3

2. SUPPORTING CLAUSES 3

2.1 SCOPE 3
2.2 ASSUMPTIONS 4
2.3 PURPOSE 4
2.4 APPLICABILITY 5

3. NORMATIVE/INFORMATIVE REFERENCES 5

3.1.1 Normative 5
3.1.2 Informative 5
3.2 DEFINITIONS 5
3.2.1 Disclosure Classification 6
3.3 ABBREVIATIONS 6
3.4 ROLES AND RESPONSIBILITIES 6
3.5 PROCESS FOR MONITORING 6
3.6 RELATED/SUPPORTING DOCUMENTS 6

4. DELIVERABLES BY THE EMPLOYER 6

5. DELIVERABLES BY THE CONTRACTOR 7

5.1 DESIGN WORK 7
5.2 CONSTRUCTION WORK 8
5.3 DESIGN DELIVERABLES 9
5.3.1 Drawing submission requirements 9
5.4 CONSTRUCTION DELIVERABLES 10

6. AUTHORISATION 11

7. REVISIONS 11

8. DEVELOPMENT TEAM 11

APPENDIX A : ESKOM DOCUMENT HIERARCHY 12

FIGURES

Figure 1: Emergency ash offloading expanded slab and retaining wall 4

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1. INTRODUCTION

Matimba Power Station has an emergency ash offloading which is an integral part of the ash management system. It is located within the perimeter boundary, to the western side of Matimba Power Station adjacent the transfer house between the cross and overland conveyors. The facility offers the station a temporary area to deposit the waste material ash when the ash conveying system is not available to transport ash to the ash disposal facility due to breakdown or maintenance activities. It is essential that the emergency ash offloading area is capacitated to adequately handle the volume of ash stored and comply to statutory environmental regulations.

1.1 BACKGROUND

Ash is deposited at the emergency offloading area by allowing the cross-conveyor belt to bypass discharging onto the overland conveyor and to offload on the existing concrete slab. Front-end loaders are used to spread the ash around the concrete slab and then used for in loading ash onto the overland conveyor once it is available to move ash to the ash disposal facility. In cases where the cross and transverse conveyors are also unavailable to transport ash to the emergency ash offloading area, the ash from the units is offloaded from the coarse ash conveyors onto the impermeable surfaced area. The ash is then collected by trucks and moved to the emergency ash offloading area.

Currently, the emergency ash offloading area only has a compliant storage area of 30m X 30m reinforced concrete slab with the associated stormwater management system as per the Matimba Power Station continuous ash disposal and related infrastructure licence (14/12/16/3/3/3/56) and the water use license (07/A42J/GECI/57260) requirements to prevent ground water contamination. The surface runoff water from the emergency ash offloading area is collected by a concrete storm water channel that is adjacent the concrete slab. The channel transports the ash contaminated water into a concrete silt-trap where the suspended ash solids are allowed to settle and water overflows into the coal stockyard collection storm water canal. The concrete canal then transports the contaminated water to the HDPE lined evaporation ponds.

There are also boreholes near the emergency ash offloading area to monitor the quality of groundwater close to the facility. Testing and monitoring are conducted on a quarterly basis by an appointed environmental consultant.

Due to the reduced reliability of the ash conveying systems, the capacity of the existing concrete slab is insufficient to contain the volume of ash being offloaded which leads to environmental non-compliance by storing the waste material ash on the natural ground. It is necessary to increase the capacity of the emergency ash offloading area to prevent ground water contamination as per norms and standard for the storage of waste (GN) 926 and upgrade the storm water management system to comply with the Government Notice (GN) 704 requirements.

2. SUPPORTING CLAUSES

2.1 SCOPE

The preferred option to mitigate environmental non-compliance is to increase the size of the existing concrete slab to meet the capacity requirements of the emergency ash offloading operations. The advantage of this preferred option is that it also caters for heavy machinery that operates in the area for moving the ash around and for in-loading. A concrete slab is more durable to withstand the impact of heavy machines compared to a HDPE liner system.

The concrete slab also serves as a good impermeable layer to prevent ash contaminated water infiltrating into the ground and polluting groundwater. The expanded area must have reinforced concrete retaining

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walls on the edges to prevent ash from spilling over onto the natural ground which will cause ground pollution as shown on figure 1. The expanded concrete lined emergency ash offloading area must have a slope of 3% from the west to the eastern side to interface with the existing stormwater management system.

Preliminary designs were done by others in 2024, these must be reviewed and detailed for construction by the *Contractor* before implementation. All designs must be accepted by the *Employer* and Environmental authorities prior to construction; design accountability remains with the *Contractor*.

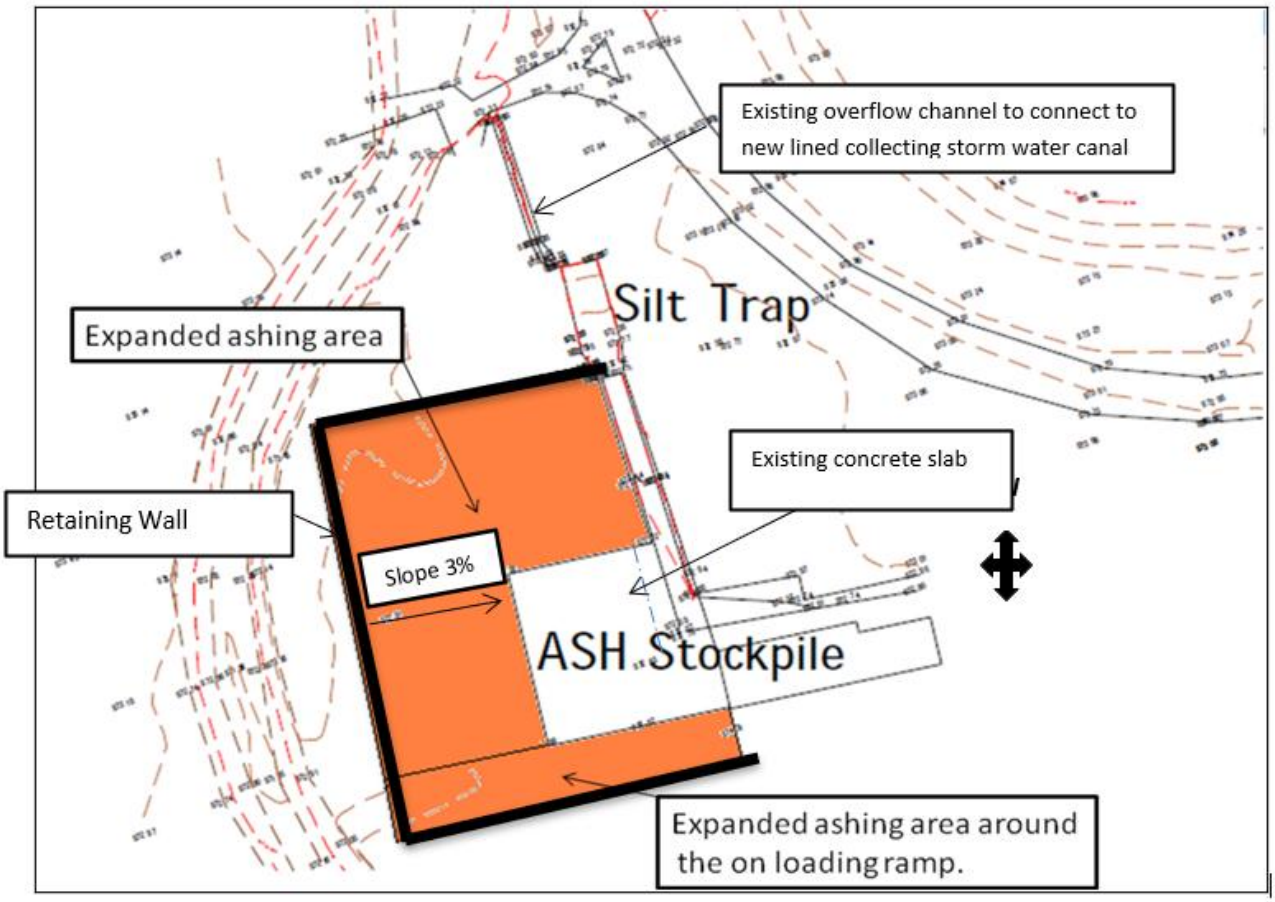

Figure 1: Emergency ash offloading expanded slab and retaining wall

2.2 ASSUMPTIONS

Technical assumptions:

- The additional 4680m2 is sufficient for operation requirements.
- The silt trap volume is sufficient for stormwater management and doesn't have to be increased.

2.3 PURPOSE

Matimba power station must comply to the water use licence (07/A42J/GECI/57260) which was issued by the Department of Water Affairs (DWA) for the ash dump expansion project that authorises the use of the Emergency ash offloading area for temporary storage of ash when the ash conveying system is not available to transport ash to the ash dump. The license condition states that the ash should be removed

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within 5 days of dumping, but this condition is no longer feasible for the existing concrete slab due to the reduced reliability of the ash conveying system which leads to excessive volumes of ash being deposited beyond the authorised area. Hence the authorised emergency ash offloading impermeable surface area must be increased to meet both the licence and operating requirements.

2.4 APPLICABILITY

This document shall apply to Eskom Matimba Power Station.

3. NORMATIVE/INFORMATIVE REFERENCES

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

3.1.1 Normative

[1] Department of Water Affairs and Forestry. Regulations on use of water for mining and related activities aimed at the protection of water resources. DWAF. Government Notice No. 704, National Water Act, 1998 (Act No. 36 of 1998).

[2] GN 926 Norms and Standard for the storage of waste, 2013

[3] 240-86973501Eskom Engineering Drawing Standard Common Requirements

[4] 240-56364545 Eskom's Structural Design and Engineering Standard

[5] ISO 9001 Quality Management Systems.

[6] ISO 45001 Occupational Health and Safety Management System

[7] ISO 14001 Environmental Management System

[8] SANS 1200 Standard Specifications for Civil Engineering Construction (All applicable SANS)

[9] C001 – 0.58/61424, Matimba Power Station, GA, Ash Offloading Facility, Slab and Retaining Wall, Concrete Layout and Details.

[10] C002 – 0.58/61425, Matimba Power Station, GA, Ash Offloading Facility, Slab and Retaining Wall, Concrete Layout and Details.

[11] C003 – 0.58/61426 SHT 1, Matimba Power Station, GA, Ash Offloading Facility, Slab and Retaining Wall, Reinforcement Details.

[12] C004 – 0.58/61426 SHT 2, Matimba Power Station, GA, Ash Offloading Facility, Slab and Retaining Wall, Reinforcement Details.

3.1.2 Informative

[13] 240-53113685 Design Review Procedure

3.2 DEFINITIONS

Definition	Description
Contract	An agreement with specific terms between two or more persons or entities in which there is a promise to do something in return for a valuable benefit known as consideration/ payment.
Contractor	A contractor is a current or potential supplier, vendor, consultant, or

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Definition	Description
	service provider. A contractor/supplier may be a natural or legal person.
Employer	Eskom project execution representatives

3.2.1 Disclosure Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

3.3 ABBREVIATIONS

Abbreviation	Description
CAD	Computer Aided Design
ECO	Environmental Control Officer
GN	Government Notice
ISO	International Standard of Organisation
M	Meter
SANS	South African National Standards

3.4 ROLES AND RESPONSIBILITIES

Client: Company that must accept the work performed and compensate for works completed as per the scope of work

Contractor: Company that must deliver work as stipulated in the scope of work document

3.5 PROCESS FOR MONITORING

N/A

3.6 RELATED/SUPPORTING DOCUMENTS

This document was compiled in accordance with the Manual for Civil Works at Eskom's Power Stations 240-99527377.

4. DELIVERABLES BY THE EMPLOYER

The Employer will be responsible for the following activities during the design and construction works

- *Employer* must facilitate environment approvals with regulatory authorities for design, access and construction works.
- *Employer* must provide Contractor with structural loading, operational, environmental, safety and maintenance requirements for design and construction works.
- *Employer* must provide access to the emergency ash off-loading facility to the Contractor for design and construction works.
- *Employer* must identify and isolate buried services during design and construction activities as per safety regulations during construction.

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5. DELIVERABLES BY THE CONTRACTOR

The work deliverables are divided into two portions design and construction work. Both portions are contractual deliverables by the Contractor.

The existing drawing series C001-C004 done by a previous contractor for the reinforced concrete slab and retaining wall, has been detailed but not accepted by Employer and Department of Forestry & Fisheries and the Environment (DFFE). These must be updated and prepared for construction. The Contractor must verify all necessary design inputs and benchmarking surveys to develop adequate construction drawings for implementation. An existing detail design calculation report for all the drawings must be reviewed, updated to align with the drawings then signed off by a professionally registered engineer, thereafter, submitted to *Employe*r and DFFE for approval prior to commencement of any construction work.

5.1 DESIGN WORK

Design a concrete slab, retaining wall, storm water management system that meets statutory safety and environmental regulations and engineering practices for an ash storage facility.

- All drawings shall be done according to Eskom Engineering Drawing Standard – Common Requirements (240-86973501). All design outputs must comply to Eskom's Structural Design and Engineering Standard (240-56364545).
- All drawings shall be signed off by a Professionally registered civil engineer with the registration number included.
- Drawings must be accepted by the *Employer* and all applicable Environmental authorities, drawings will be subjected to an iterative design review process prior to implementation and construction phase as per Eskom design review process (240-53113685).
- *Contractor* must prepare and submit to the *Employer* a Master Document List (MDL) of all contractual communications and submissions. The MDL must be updated and submitted by the *Contractor* weekly to the *Employer.*
- *Contractor* must survey area prior to design work and verify setting out points, ensure to provide allowance for construction plant not to damage or interfere with ash conveying operations.
- *Contractor* must detail and integrate designs with existing infrastructure above and below the ground level.
- *Contractor* must review and verify the existing geotechnical study report prior to design work to confirm the founding conditions. Thereafter *Contractor* must submit the confirmation/gap analysis report to the Employer, prior to updating designs.
- *Contractor* must review existing basic design drawings (C001-C004) and associated design reports for design input requirements. *Contractor* must submit the confirmation/gap analysis report to the *Employer*, prior to updating designs.
- *Contractor* must review, verify and update the assessment report of the existing silt-trap capability analysis, that the volume is sufficient to manage storm water run-off from the extended reinforced concrete as per environmental regulations GN 704. *Contractor* must submit the confirmation/gap analysis report to the *Employer*, prior to updating the document.
- *Contractor* must prepare and submit detailed designs of the 4680 m2 reinforced concrete slab. It must tie into the existing 30x30m concrete slab and channel, to withstand ash and heavy vehicle load. The slab design must include the design of stormwater management system that complies to the environmental regulation GN 704 and 926.

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- *Contractor* must evaluate drawings 0.58/10222 - 0.58/10229 and re-design a similar 35MPa reinforced concrete retaining wall to suit in-loading operation requirements it should withstand impact from heavy machines and contain the ash within the parameter of the 4680 m2 reinforced concrete slab. The retaining wall should have a minimum thickness of 0.25m and maximum height of 4m. It must provide allowance for movement of heavy vehicles in and out of the facility with an access ramp.
- *Contractor* must repair existing infrastructure above and below ground if damaged during design and construction works.
- *Contractor* to provide all equipment for design and construction work. The facility is an operational facility for ad hoc ash handling activities such as ash disposal, in-loading and removal of ash by trucks.
- *Contractor* must ensure all design drawings include necessary safety guards for operating activities and traffic control/management.
- *Contractor* must prepare and submit the relevant documentation i.e. design report, material specification and quality assurance reports for all structural designs for review by the *Employer* and Environmental authorities for acceptance prior to commencement of construction.
- *Contractor* must prepare and submit mix designs for all concrete works to the *Employer* for review prior to commencement of construction activities.
- *Contractor* must prepare and submit as-built drawings along with structural stability certification once construction is completed to the *Employer* and Environmental authorities.
- Exposing and encasing of existing services in 15MPa concrete

5.2 CONSTRUCTION WORK

Contractor will construct all works in-line with the approved design drawings, technical specifications and quality requirements. The Contractor's Professional Civil engineer (PrEng) or his/her representation must conduct all quality assurance and control checks during construction. The PrEng must sign off all mandatory quality interventions points during construction and provide allowance for quality checks by the Employer's representative for the works below:

- *Contractor* must keep record of all quality control plans (QCP) or inspections test plans on site in a Databook from construction start until completion.
- *Contractor* must prepare and submit all quality control documentation signed off by the PrEng to the *Employer* for review prior to commencement of construction activities.
- *Contractor* must prepare and submit method statements signed off by the PrEng to the *Employer* for approval prior to commencement of construction activities
- Site clearance of vegetation for all construction activities access, temporary and permanent works
- Underground scanning for buried services before any excavation activities. *Contractor* must get excavation permit approved by the *Employer's* representative for all excavation requirements.
- *Contractor* must expose existing services if detected, then inform the *Employer's* representative to identify and isolate the services prior to further construction activities.
- *Contractor* must re-route away from construction activities or protect existing services if encountered with 15MPa unreinforced concrete and HDPE sleeves where applicable.
- *Contractor* must survey the works before and during construction for quality control and assurance.
- *Contractor* must submit survey verification reports to the *Employer's* representative and keep records of all the surveying checks in the Databook.

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- Remove all unsuitable materials of varying depth from 300-1000mm and dispose at the ash dump.
- Rip, grade, mix and compact in situ layer to 95% MOD AASHTO
- Import suitable materials for base layer works of the concrete slab.
- Erect all formwork for the concrete work as per design drawings.
- Supply and install reinforcement as per design drawings.
- Ensure the interfacing of the newly cast slab and the existing slab is functional (steel dowels may be drilled into the existing slab)
- Construct a 35MPa reinforced concrete slab of 4680 m2 as per designs.
- Construct a 35MPa reinforced concrete retaining wall around the slab in line with design drawings and specifications but with a maximum height of 4m and ensuring wall dimensions align with the parameter of reinforced concrete slab of 4680 m^2.
- Supply and install safety guards and traffic management signs as per design drawings.
- Complete construction works as per approved method statements.
- Verify all construction works aligns with approved quality assurance and control documentation.
- *Contractor* to submit all construction data books signed by the PrEng to the *Employer* once construction is completed.
- All construction work to be verified by the Professional Civil Engineer to ensure as-built drawings and structural stability certification after completion of construction.
- .

5.3 DESIGN DELIVERABLES

1. The design portion entails submission of a report for analysing all existing designs and associated design reports from a previous Contractor with proposed changes recommendations.
2. Prepare and provide updated design report, technical specification, construction quality assurance plan, and provide input to environmental applications when required.
3. Prepare detailed design drawings for construction as per the Eskom Drawing Standard: 240-86973501, all drawings and supporting documents should be signed by the Contractor's Professional Civil Engineer prior to submission to the *Employer*.
4. Prepare and submit as-built drawings, once construction is completed.
5. Prepare and submit professional engineering certify the works once construction is completed.
6. Prepare and provide the maintenance plan for the concrete slab, retaining wall and associated stormwater management system and submit to the *Employer*.
7. All design drawings and supporting documentation will be reviewed and accepted by both Eskom and the Department of Forestry, Fisheries and the Environment (DFFE). The Professional Civil engineer remains accountable for the designs and must be familiar with environmental legislation requirements for the facility.

5.3.1 Drawing submission requirements

Please note the following in terms of the design drawings:

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All drawings shall be done according to Eskom Engineering Drawing Standard – Common Requirements 240-86973501 latest revision. If there are any discrepancies between the information in this document and that of the above-mentioned standard, the information in this document shall get preference.

- Drawings shall be of the standard sizes e.g. A0, A1, A2, etc.
- They shall be suitably prepared to facilitate electronic storage and incorporate a revision numbering and indication system provided by the Employer.
- Dimensions on the drawings shall be in the SI system.
- Levels shall be indicated in metres, all other dimensions in millimetres.
- All survey data shall be in accordance with the WGS84 coordinate system unless otherwise specified or agreed upon.
- All text shall be in English.
- Drawings shall be submitted together with the relevant complete calculations.
- Claim to all drawings prepared by the *Contractor* under any order placed by the *Employer* shall be vested in the *Employer*, and the latter shall have the right to use these drawings for any purpose without any obligation to the *Contractor*.
- All drawings submitted to Eskom shall comply with Eskom Standard drawing applications version, at that specific time.
- All drawings must be issued to Eskom in both native CADD, DGN format and PDF/TIF format, on each submission
- PDF/TIF files must be created using the native CADD program
- Eskom standard CAD software applicable is (MicroStation and Smart Plant Enterprise).
- Drawings issued to *Employer* may not be “Write Protected” or encrypted as Eskom must do the necessary configuration management on these documents upon receipt.
- The *Contractor* shall not disclose or issue to third parties without written consent of the *Employer* any documents, drawings, etc., placed at his disposal by the Employer or any documents prepared by himself in connection with enquiries and orders for purposes other than the preparation of a quotation or carrying out these orders.
- All drawings issued by the *Contractor* shall be signed by a professionally registered engineer; this signature shall be accompanied by the engineer’s professional registration number.
- All drawings shall have *Employer* and *Contractor* numbers.

5.4 CONSTRUCTION DELIVERABLES

Construction to be completed as per design drawings, technical specifications and standards

1. Site Establishment and de-establishment as per Employer requirements.
2. Submit Method statements to the *Employer* for approval prior to construction activities.
3. Submit quality assurance and control documentation to the *Employer* prior to construction activities.
4. Completed structures as per scope of works requirements.
5. Prepare and submit handover documentation as listed in the *Contractors* QCA to the *Employer*

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6. AUTHORISATION

This document has been seen and accepted by:

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7. REVISIONS

Date	Rev.	Compiler	Remarks
October 2019	1	W Mokoena	Detailed designs and adding attenuation facility
June 2025	1.1	S Tshabalala	Updating detailed designs
March 2026	2	J Motsweni	Remove the temporary facility scope

8. DEVELOPMENT TEAM

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

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- Hope Mukhomi
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APPENDIX A: ESKOM DOCUMENT HIERARCHY

BASIC DESIGN DRAWINGS BY TOW AFRICA

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