

MEMORANDUM

Date: 13 October 2020 **File No.:** 301-00825/01/DEFF

To: Keshia Brijlal
Copy To: Nicolan Govender, Andre Kreuiter, Thabang Mokoma, Andrew Copeland
From: Jannie Viljoen
Re: **Response to DEFF approval and final detailed design submission**

The approval received from the Department of Environment, Forestry and Fisheries (DEFF) attached hereto has reference.

We've reviewed the approval from DEFF and our reply on the conditions are discussed in this memorandum. This memorandum also include the submission of the final detailed design drawings, schedule of quantities and updated specifications.

1.0 DEFF CONDITIONS

Conditions 2.1 to 2.11

Response: The content hereof is noted.

Condition 2.12: *"The design and supervision engineers shall ensure that the construction and operational phase management of the storm-water through penstocks upstream of the ash disposal area does not allow the GCL to become super saturated nor result in instability due to bentonite bleed or similar:*

Response: We don't foresee any bentonite bleed to occur and any upstream storm-water collected through the penstocks will be collected and managed accordingly.

Condition 2.13: *"The Licence Holder's engineer shall confirm the nature and the extent of ballast to be placed above the geomembrane in the North and South return water dams, demonstrating the specified time of placement is adequate to avoid panel shrinkage and desiccation of the underlying GCL component of the liner system. This was omitted on drawings number 301-00825/01-146 REV 3, 0.58/61414 Sheet 7 Rev 3. EA"*

Response: A 200 mm protection layer will be placed above the geomembrane in the north and south return water dams. This will be placed as soon as possible after construction to avoid any panel shrinkage and desiccation of the underlying GCL component of the liner system. The necessary corrections were made on Drawings 146 (south RWD) and 506 (north RWD).

Condition 2.14: *"The drawing 301-00825/01-144 Rev 2, 0.58/61414 Sheet 5 Rev 2, reflecting the liner cross sections shall be amended for the TSF (currently showing the layer works above the 2 mm GM*

to be a 200 mm thick sand filter layer plus 300 mm thick protection layer) to be aligned with the stability analysis which is based on a single texture GM smooth side interface with a non-woven needle punched geotextile (A6 Geofabric)."

Response: The dimensions on Drawing 144 was updated to be 100 mm thick protection layer.

Condition 2.15: *"The Construction Quality Assurance (CQA) shall be amended to include photographic records of construction and video record of the method of which the 300 mm thick selected sand filter and protection layer is placed above the floor area of the 4 – 8 year ADF; reflect compliance with SANS10409 and be to at least the standard of the Department of Water and Sanitation draft guideline in SI units and South African Standard Specifications, recognizing the Eskom project specifications."*

Response: The Technical Specifications document has been updated.

Conditions 2.16: *"An Electric Leak Location Survey (ELLS) in accordance with ASTM D8265 shall be implemented post placement of the ballast layer in an area not less than 0,5 hectares of the 30,6 hectares ADF and similar for each of the RWDs post placement of ballast to confirm the placement technique complies with the assumed limitation of damage. If the ELLS including voltage map confirms the placement results in no damage for the trial area the condition will no be necessary for the remainder of the ADF area or RWD for the particular placement technique."*

Response: This is relatively new technology and a proposal can be supplied to investigate this condition and the design thereof.

2.0 UPDATED DRAWINGS AND SOQ

2.1 DRAWINGS

We've submitted drawings for phases 0 to 2 on 18 September 2020 and we continued with changes to the drawings for phases 3 to 8. We've received comments from Andre on Phases 0 to 2 and we've addressed these comments.

With regards to Drawing 121: A manhole has been proposed since the initial submissions. This design change will unfortunately can not be implemented now as we've spend a significant amount of time making the required changes We trust we will be appointed for site supervision where we can make an allowance in our proposal to perhaps change this on site or prior to the contractor being appointed.

The remaining drawings have been updated and a final set will be supplied to you electronically for download. The updated drawings include the comments as agreed with Andre Kreuter in the discussions during the meetings held 9 September 2020 and 5 October 2020.

2.2 SCHEDULE OF QUANTITIES

- **Query:** *"Items B2.6.2 and B2.6.3 rate is based on supply and lay. If it is found that the material on site is suitable for use as 200 mm sand layer and 100 mm gravel layer then these items will be considerably cheaper as no commercially sourced material will be required and the cost will just be for laying the material. In other words the items B2.6.2 and B2.6.3 represent the worst case cost correct?"*

Response: Correct.

- The schedule of quantities has been updated to incorporate the changes as per the conditions of the DEFF. Item D3.5.3 has been added allowing for a ballast layer in the northern and southern RWDs.

- **Topsoil:**

Item B2.1.1 updated to match Detailed Design Report and to be 500mm deep. The resulting deficit in topsoiling is thus 645,930m³. This deficit has been allowed for in Item B2.6.1.

It should be noted that during the geotechnical investigations, testpits were dug and the soil conditions noted during the investigations. The amount of topsoil estimated for excavation under Item B2.1.1 can differ once the topsoil on site is removed and the underlaying soil is exposed. This variance in quantity will directly affect B2.6.1. Every effort has been made to make this estimation as accurately as possible.

3.0 CONCLUSION

We believe the necessary changes and comments has been addressed and the design is ready to be constructed.

Prepared:



Jannie Viljoen PrEng
Senior Civil Engineer
For Knight Piésold (Pty) Ltd



environment, forestry & fisheries

**Department: Environment, Forestry
and Fisheries
REPUBLIC OF SOUTH AFRICA**

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

Reference No. 12/9/11/L198/5

Enquiries: Lucas Mahlangu

Tel: (012) 3999791 Email: lmahlangu@environment.gov.za

www.environment.gov.za

**ESKOM HOLDINGS
P.O. Box 1091
SUNNINGHILL
2157**

APPROVAL OF DETAILED DESIGN DRAWINGS FOR ESKOM MATIMBA POWER STATION 4 - 8 YEAR ASH DISPOSAL FACILITY LINED EXTENSION IN TERMS OF SECTION 50 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 – LIMPOPO PROVINCE.

The request for approval of Eskom Matimba Power Station 4 – 8 year Ash Disposal Facility (ADF) lined extension designs received by this office on 07 July 2020 has reference.

1. The Following documentation was evaluated to make an informed decision:

- 1.1 Matimba Ash Dump Continuous Ashing – Basic & Detailed Design Report, Detailed Design Report having reference RI301 – 00825/01 REV B compiled by Knight Piesold Consulting engineers dated 13 May 2020 signed by J Viljoen, T Mokoma (Pr Eng # 20140489) and JRG Williamson (Pr Eng # 704312)
- 1.2 Matimba Power Station: Ash Dump, Project Technical Specifications with reference 301-00825/1 dated 8 April 2020, unsigned.
- 1.3 Forty-six (46) drawings signed by Mr JRG Williamson (Pr Eng # 704312).
- 1.4 Knight Piesold Consulting Memorandum, Final Liner Interface Testing Results and Stability (and attachments) with reference 30100825/01/M1 signed by R Greyling (Pr Eng # 201901026) and JRG Williamson (Pr Eng # 704312) dated 17 April 2020.

2. Based on the assessment of the technical documents submitted, the Department made the following decision:

Approves the Detailed Design Drawings for Eskom Matimba Power Station dry ash disposal facility extension designs for the 4 – 8 year lined ash disposal facility area, with associated North and South Return Water Dams (RWDs) and storm water management as recorded in the design report and drawings certified in the Knight Piesold design report and drawings signed by T Mokoma (Pr Eng # 2014 04 89) and JRG Williamson (Pr Eng # 704312);

APPROVAL OF DETAILED DESIGN DRAWINGS FOR ESKOM MATIMBA POWER STATION 4 - 8 YEAR ASH DISPOSAL FACILITY LINED EXTENSION IN TERMS OF SECTION 50 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 – LIMPOPO PROVINCE.

On condition that:

- 2.1 This approval does not exempt the Licence Holder from complying with any other legislation.
- 2.2 This review refers only to the activity as specified and described in the signed design reports and drawings listed under documentation submitted for consideration.
- 2.3 A one month's written notice must be given to the Competent Authority before commencement of construction and operational phase activities. Such notices shall make clear reference to the site location details and the reference number of the project as indicated.
- 2.4 The Licence Holder must notify the Competent Authority in writing within 24 hours if any condition of this design and its acceptance cannot be or is not adhered to during construction and operation. The notification must be supplemented with reasons for non-compliance and proposed rectification measures.
- 2.5 Within 6 months of commencement of waste disposal, the Licence Holder shall confirm the waste risk assessment reported as the basis for design to be correct for currently produced slag and slimes, taking the "worse-case" and combined effects into consideration for facilities receiving one or more waste streams including compliance with the National Water Act, Act 36 of 1998, Section 19 on pollution control.
- 2.6 Design and construction records including topographical surveys and methodical material test results (on all materials used) shall be maintained, archived and accessible for the life of the facilities (including decommissioning).
- 2.7 The Competent Authority shall not be held responsible for any damages or losses suffered by the Licence Holder or its successor in title in any instance where construction or operation subsequent to construction is temporarily or permanently stopped for reasons of non-compliance by the Licence Holder with the conditions of approval as set out in this document or any other subsequent document emanating from these conditions of acceptance.
- 2.8 The discharge of leachate or polluted water from the pollution control dams or clarifier dam/tailings storage facility 2 is to be reported as an incident within 24 hours and treated as such with appropriate remediation.
- 2.9 The Licence Holder must place Cordons, Barriers and Warning Systems around facilities to define the nature and extent of each disposal or waste management area, and avoid intersection of different waste types as per the NEMWA Regulations 2013 (e.g there must be a clear barricade between areas for Type 1. Type 2 and for Type 3 waste which may be destined for separate facilities but on/from the same site). Similarly, signage shall include warnings in respect of contaminated liquids and low density sludge's etc.
- 2.10 All significant differences between predicted and actual performance of waste management facilities shall be reported to the Competent Authority annually in writing.
- 2.11 The Licence Holder shall ensure that there is no alignment between Engineer, contractor, subcontractors, material suppliers and construction quality assurance agent in the development and implementation of construction quality assurance therefore (in line with the Competitions Act).

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- 2.12 The design and supervision engineers shall ensure that the construction and operational phase management of storm-water through penstocks upstream of the ash disposal area does not allow the GCL to become super saturated nor result in instability due to bentonite bleed or similar.
- 2.13 The Licence Holders engineer shall confirm the nature and extent of ballast to be placed above the geomembrane in the North and South return water dams, demonstrating the specified time of placement is adequate to avoid panel shrinkage and desiccation of the underlying GCL component of the liner system. This was omitted on drawings number 301-00825/01-146 REV 3, 0.58/61414 Sheet 7 Rev 3. EA
- 2.14 The drawing 301-00825/01-144 REV2, 0.58/61414 Sheet 5 REV2, reflecting liner cross sections shall be amended for the TSF (currently showing the layer works above the 2 mm GM to be a 200 mm thick sand filter layer plus 300mm thick protection layer) to be aligned with the stability analysis which is based on a single textured GM sooth side interface with a nonwoven needle punched geotextile (A6 Geofabric).
- 2.15 The Construction Quality Assurance (CQA) shall be amended to include photographic records of construction and a video record of the method by which the 300mm thick selected sand filter and protection layer is placed above the floor area of the 4 – 8 year ADF; reflect compliance with SANS10409 and be to at least the standard of the Department of Water and Sanitation draft guideline in SI units and South African Standard Specifications, recognizing the Eskom project specifications.
- 2.16 An Electric Leak Location Survey (ELLS) in accordance with ASTM D8265 shall be implemented post placement of the ballast layer in an area not less than 0,5 hectares of the 30,6 hectares ADF and similar for each of the RWDs post placement of ballast to confirm the placement technique complies with the assumed limitation of damage. If the ELLS including voltage map confirms the placement results in no damage for the trial area the condition will not be necessary for the remainder of the ADF area or RWD for the particular placement technique.
- 2.17 The Licence Holder shall record flow volumes into the North and South return water dams and volume of water used above the lined area for dust suppression monthly, and make these records available to the Responsible Authority annually or upon request. The record shall include the temperature of water.
- 2.18 The engineer's construction completion certificate confirming the as-built facility is in accordance with the accepted design shall be forwarded to the Competent Authority with supporting evidence, for written acceptance, prior to disposal of dry ash.

In case of any enquiries with regard to the above approval, please do not hesitate to contact this office.



MS MISHELLE GOVENDER

CHIEF DIRECTOR: HAZARDOUS WASTE MANAGEMENT AND LICENSING

DATE: 29/09/2020