

Centre for Environmental Rights
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Observatory
Cape Town
7925
Att: Michelle Sithole

Date: 7 February 2022

Enquiries:
Tel: 083 746 3529

Reference number: PAIA 223, – CER/NL/MS

Dear Ms Sithole

THE PROPOSED MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2A – REQUEST FOR INFORMATION ON MEDUPI AND MATIMBA COAL PLANT AND RELATED INFRASTRUCTURE WATER REQUIREMENTS

Eskom has considered your PAIA application dated 15 December 2021, regarding the abovementioned matter and, noting the notification of an extension in terms of Section 26 (1) (a) and (c) of the PAIA, is please to respond as follows.

3.1. We refer to the pre-feasibility study for MCWAP of September 2010, which states that water requirement scenarios were compiled in respect of Matimba Power Station (FBC), Medupi Power Station (FGD), three (3) new power stations (FGD) and coal supply to five (5) power stations. ² What were the envisaged water scenarios for Medupi and Matimba as per the 2010 feasibility study and what are the current and projected 5year water requirements of each facility and associated infrastructure? What is the current water consumption per unit at Medupi?

See attached spreadsheet, Attachment A, for historic and current water demand projections and actual water use at Medupi.

Explanation:

- The Planning Reports for the MCWAP are available on the DWS Website. The Pre-feasibility Report that the CER is referring to is the Pre-feasibility Stage 1 Report Water Requirements, DWA Report Number P RSA A000/00/8809 of September 2010. Sections 3 and 4 of the aforesaid Report cover the User Water Requirements and the Total Water Requirement for the MCWAP respectively. This is a Public Document, and a PDF Copy thereof is attached Attachment B. Eskom has attached the water demands projection that the report is based on. Furthermore, the DWS commissioned the MCWAP Post Feasibility Bridging Study, which was concluded in August 2015. The Study Report is the Post Feasibility Bridging Study MCWAP-2A: Review Report DWS Report Number P RSA 000/A00/18413 of 31 August 2015. This Report is in the Public Domain, and available on the DWS Website. The aforesaid Report covers the

Updated Water Demand Projections; Review of the Latest Integrated System Yield Analysis; Review of Water Transfer System Capacity Including Options Analysis, and the Updated Life Cycle Costs Analysis. Sections 4, 5, 6, and 7 cover the Assessment of the Municipal Water Requirements, Irrigation Water Requirements, Industrial Water Requirements, and the Total Water Requirements respectively. This is a Public Document, and a PDF Copy thereof is attached, Attachment C. Based on the recommendations of the Post Feasibility Bridging Study of 2015 the MCWAP-2A is being designed for a transfer capacity of 75 million m³/annum. The Post Feasibility Bridging Study also made allowances for retrofit of Flue Gas Desulphurisation (FGD) at Matimba Power Station. Please take note that:

- An updated water demand projection was provided to the DWS in 2021 and is included.
- The water used per month for the current financial year is also included. The nett water used is the total water used for electricity generation and excludes the FGD (at this stage as the FGD system has not been installed). The nett water usage is the function of the number of units on load, the megawatts generated and the reuse of effluent water on-site. The reuse of effluent water on-site reduces the raw water demand. The water consumption per unit relates to demineralized water used per unit and is dependent on megawatts generated per unit. It should be noted that the performance of Medupi units has not yet stabilised and hence a difference in the overall Nett Water Usage and Units demineralized water consumption.

3.2 What is Eskom's current expenditure on the MCWAP-2 project, and estimated expenditure on the MCWAP-2 project for the duration of the project and annually?

The MCWAP-2A is a Department of Water and Sanitation (DWS) Project, and the DWS directed the Trans-Caledon Tunnel Authority (TCTA) to implement the MCWAP-2A on behalf of the DWS. Therefore, all the capital expenditure incurred on the project will be covered by the DWS for the Social Portion (about 10%), and through loans for the Commercial Portion (about 90%) until the MCWAP-2A is commissioned and operational. Thus, there is no Eskom expenditure on the MCWAP-2A currently. Eskom signed a Water Supply Agreement for water from the MCWAP 2A for the Medupi Power Station and the Matimba Power Station, which will require Eskom to pay water tariffs only when the MCWAP-2A is able deliver water to Eskom, which is expected to be in 2027. The water tariffs are determined on the cost to repay the capital for Commercial Portion, which includes the infrastructure, the operating costs and statutory tariffs imposed by the DWS. The estimated system capital tariff from the MCWAP system is R14/m³(in 2021 Rand), which Eskom is liable to pay on its licensed volume only when the MCWAP 2 is completed

3.3 What is the current status of Eskom's plans to abate sulphur dioxide ("SO₂") emissions at Medupi? What technology options are currently being considered for SO₂ abatement and what are the water requirements of the proposed SO₂ abatement technology options? Do these options require water over and above what is already available in the area?

Medupi Power Station is designed and constructed to be "Wet Flue Gas Desulphurisation (WFGD) ready". In 2020 Eskom undertook an exercise to review the latest information from the market to establish if there were more cost-effective FGD technologies available than were originally identified. Based on information gathered Eskom will be approaching the market

again in the 2nd half of 2022 to obtain proposals for the implementation of appropriate technology solutions to meet the technical requirements for SO₂ reduction at Medupi. Eskom does not intend to prescribe a technology solution (dry, semi-dry or WFGD) to the market and as such the specific water requirements of the solution have not been determined. In its planning for Medupi Eskom has considered the water requirements for WFGD as a worst-case scenario.

3.4. What are the current water supply sources for Medupi and Matimba's operational requirements?

Matimba and Medupi receive their raw water from the Mokolo Dam Supply System (the MCWAP-1). The Mokolo Dam is, however, stressed and cannot supply the current and growing domestic and industrial, as well as for power generation water demands, at the required assurances of supply, which are 98% for domestic and industrial, and 99.5% for power generation.

3.5 Have alternative water sources to MCWAP-2 been considered for Medupi and Matimba? If so what water sources have been considered?

The DWS is the custodian of all water resources and therefore undertakes specific specialist studies in priority areas to determine what water supply options are available at the required assurance of supply (assurance of supply to Eskom power stations is at 99.5%). The options that were investigated to supply the Lephalale Area in the past included, the current developed water resource being the Mokolo Dam, return flows (direct and indirect re-use) in the area and from the Crocodile River (West), as well as ground water. It was determined that the most technically feasible and long-term sustainable solution is the development of MCWAP-2 to ensure an assurance of supply of 99.5% for the life of both power stations and to mitigate against prolonged drought in the Mokolo River Catchment. The Past DWS Studies include, but are not limited to, the following:

- Mokolo and Crocodile River (West) Water Augmentation Project Feasibility Study, Report Number P RSA A000/00/8109, Department of Water Affairs, September 2010, which is a Public Document, and of which a PDF Copy is attached, Attachment D.
- Post Feasibility Bridging Study, MCWAP-2A: Review Report, Report Number P RSA 000/A00/18413, Department of Water and Sanitation, 31 August 2015. Refer to response to **3.1** above.
- Mokolo River System: Annual Operating Analysis 2011/2012, Report Number P RSA 000/00/14511, Department of Water Affairs, June 2011.
- Limpopo Water Management Area North Reconciliation Strategy 2017, Report Number P WMA 01/000/00/02914/11B, Department of Water and Sanitation, February 2017.
- Hydrogeological Assessment and Aquifer Recharge Potential within the Lephalale (Ellisras) Local Municipality Area, Report Number PWMA 01/A42/00/02209_01, Department of Water Affairs, 20 January 2010.

- Hydrogeological Assessment and Aquifer Recharge Potential within the Lephalale (Ellisras) Local Municipality Area Phase 3: Artificial Recharge and Geochemistry, Report Number PWMA 01/A42/00/02209_02, Department of Water Affairs, 10 June 2010.

3.6 How many units of Medupi are currently online?

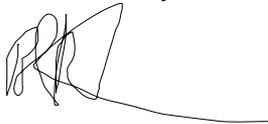
All six (6) units at Medupi are in commercial operation. However, unit 4 is on long-term forced outage since 16 August 2021 due to a generator failure.

Please refer to the DWS and the above-mentioned Studies Reports for more details. Eskom also requested, and received, inputs from the DWS as far as this PAIA Request is concerned, and the relevant contact person at the DWS is Mr. JL Enslin, PrEng, Chief Engineer: Water Resources Development Planning (enslinj@dws.gov.za).

Eskom trusts that it has addressed the requested questions adequately.

For any queries, please contact the Eskom PAIA office at: PAIA@eskom.co.za

Yours sincerely



Brad ROSS-JONES
Deputy Information Officer: GENERATION
Date: 7 February 2022