APPENDIX F

LETTER FROM DEA – SEDIMENT MANAGEMENT

147 Bram Fischer Drive
FERNDALE
2194

P.O. Box 1673
SUNNINGHILL
2157

Tel: 011 781 1730
Fax: 011 781 1731
Email: info@nemai.co.za

Our Reference: 10580-20160331

31 March 2016

Department of Environmental Affairs
Private Bag X447
Pretoria
0001

Attention: ZINGISA PHOHLO

Re: MOKOLO CROCODILE WATER AUGMENTATION PROJECT (MCWAP) PHASE 2 – WASTE QUERY

Dear Zingisa

This letter serves to query the need for a Waste Management Licence in terms of the National Environmental Management: Waste Act (NEM:WA) (Act No. 59 of 2008) for the abovementioned project. This query stems from discussions held with the Department of Environmental Affairs (DEA) during a meeting on 17 March 2016.

A. PROJECT BACKGROUND & DESCRIPTION

Major developments are planned for the Waterberg coalfields that are located in the Lephalale area. As a direct result of the aforementioned developments, the demand for water in the Lephalale area will significantly increase over the next 20 years. Due to the limited availability of water in the Lephalale area, the Department of Water and Sanitation (DWS) commissioned a feasibility study of the Mokolo Crocodile (West) Water Augmentation Project (MCWAP) to establish how the future water demands could be met. MCWAP is a Strategic Integrated Project (SIP) Category 1 project.

Phase 2 of MCWAP consists of a transfer scheme from the Crocodile River (West) at Vlieëpoort near Thabazimbi to the Lephalale area via a system consisting of:

- A weir and abstraction infrastructure, including a balancing reservoir, desilting woks, and a high lift pumpstation;
- Transfer system (approximately 100 km), consisting of alternative pipeline routes for the rising main pipeline, with the preferred route running primarily parallel to the railway line;
- A Break Pressure Reservoir;
- An Operational Reservoir; and

- A Delivery system, consisting of a gravity pipeline (approximately 30km) running from the Operational Reservoir to the Steenbokpan area, connecting to the Phase 1 works.

B. SEDIMENT MANAGEMENT AT ABSTRACTION WORKS

The bulk water transfer process requires careful management of the dynamic sediment load conditions in the Crocodile (West) river system. The sediment load during base flow or low flow conditions are insignificant. This was verified by actual sampling during base flow conditions over the last 5 years. The bulk of the annual expected sediment load is transported during flood events. The option exists to limit water abstraction during the rising stages of floods to reduce the volume of abstracted suspended sediment. However, for the purpose of reviewing the potential impact of a desilting facility, it was conservatively assumed that pumping will continue during floods.

The annual sediment load consists largely of natural soil particles classified as having a gravel fraction, a sand fraction, a silt fraction and a clay fraction based on the particle size distribution. Sediment will deposit upstream of the proposed abstraction weir. The sediment will thus be effectively stored in the river. When abstracting water for MCWAP-2, up to 4% of the sediment load that is in suspension will be abstracted as well. When scouring the approach channels of the proposed abstraction works, some of the sand and gravel fraction deposits will be washed down stream. It is important to maintain a holistic view of all the sediment interfacing processes associated with the MCWAP-2 infrastructure.

The up to 4% of the sediment load that is abstracted in suspension is foreseen to require the following management interventions:

a) The volume of fine sand and silt fraction entering the balancing dams at the high lift pump station needs to be limited. This is done using a proposed desilting facility. Should this not be done an additional silt storage facility will be required. (Approximately 400 000m^3 over a projected 50 year period);
b) Introducing a desilting facility upstream of the balancing dams at the high lift pump station will remove on average 15 000t of fine sand and silt annually. It also means that annually 15000t of sediment needs to be scoured back to the river;
c) The desilting facility has a capacity of approximately 10 000m^3. The proposed facility consists of 8 channels of 120m long 2.5 m wide and between 4 and 5.5m deep. Six of the channels provide sufficient silt storage capacity to allow a single scouring operation each year. The scouring process is flood event driven;
d) Provision is made in the balancing dams to permanently store approximately 5000t of sediment per annum; and
e) Allowance is also made to pump approximately 2000t of sediment in suspension (clay fraction) each year.

The potential classification of the sediment as waste has significant implications on the operations. This would not only impact on the scouring from the de-silting works but also on the operations at the abstraction weir, the balancing dams, the reservoirs and the storage facilities of the users. It will also impact on the scouring of the pipelines.

Refer to the pictures to follow for similar type infrastructure.

Figure 1: View from outlet end towards inlet end of Lebalelo Weir Desilting Works (example)

Figure 2: View of inside of desilting channel at Lebalelo Weir Desilting Works (example)

C. SEDIMENT QUALITY ANALYSIS

An analysis was undertaken to establish a quality profile of the silt to be abstracted from the Crocodile River. A copy of the analysis is contained in Appendix A.

The test results for heavy metals were found to be well within allowable limits in terms of the following:

- Netherlands National Institute of Public Health and the Environment;
- South African Water Quality Guidelines (Irrigation); and

- Waste Discharge Standards (DWA 2010 Guidelines).

An important factor to bear in mind is that the abstracted suspended sediment is less than 4% of total average annual sediment load in the river and that only up to 2% is planned to be returned. In addition, it is understood that the chemical characteristics of sediment in river are the same as for the sediment to be returned.

D. ENVIRONMENTAL ASSESSMEMT

The scope of the environmental assessment for MCWAP-2 is to seek approval for the project in terms of the following key legislation (amongst others):

1. National Environmental Management Act (No. 107 of 1998);
2. National Water Act (Act No. 36 of 1998); and
3. Minerals and Petroleum Resources Development Act (No. 28 of 2002).

Uncertainty exists with regards to the need for a Waste Management Licence in terms of NEM:WA, with particular reference to returning the sediment back to the Crocodile River from where it was abstracted. This matter was discussed with DEA during a meeting that was held on 17 March 2016, and it was suggested that a formal query be lodged with the Department to seek clarity whether the sediment in question is regarded as “waste”. We thus request your assistance in this regard.

You are welcome to contact the undersigned for any queries.

Yours faithfully
Nemai Consulting C.C.

Donavan Henning
Environmental Assessment Practitioner

APPENDIX A

MCWAP INTERIM SEDIMENT QUALITY REPORT

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447, PRETORIA, 0001· 473 Steve Biko Road, Arcadia, PRETORIA

Ref. 12/9/11/L
Enquiries: Ms. Zingisa Phohlo
Tel: (012) 399-9786 **Fax:** (012) 359-3625 **Email:**Zphohlo@environment.gov.za
www.environment.gov.za

Nemai Consulting
P.O. Box 1673
SUNNINGHILL
2157

Attention: Donavan Henning

RE: MOKOLO CROCODILE WATER AUGMENTATION PROJECT (MCWAP) PHASE 2 – WASTE QUERY.

The above matter refers;

The Department confirms having received the above-mentioned query on the 31 March 2016.

Please be informed that based on the information provided regarding the Mokolo Crocodile Water Augmentation Project Phase 2, the project does not trigger any listed activity in terms of NEM:WA (Act No. 59 of 2008), therefore no Waste Management license will be required from the Department.

Should you require further detailed information, Please do not hesitate to contact this office.

Yours sincerely

Mr. Mark Gordon
Deputy Director-General: Chemicals and Waste Management
Department of Environmental Affairs
Letter signed by Mr. Bonginkosi Dlamini
Date: 12/04/2016