NOTICE OF PUBLIC PARTICIPATION PROCESS

Notice is hereby given in terms of Regulation R982 published on Government Gazette No. 38282 of 04 December 2014, of National Environmental Management Act 107 of 1998 (NEMA) of the intent to amend the Operational Environmental Management Programme report (OEMPr). An application of amendment of OEMPr is to be submitted at Department of Forestry, Fisheries and Environment (DFFE). This application is subject to a public participation process-in terms of Regulation 41 of the EIA Regulations, 2014.

PROJECT NAME: Immediate and short-term interventions for treatment of acid mine drainage in the Central and Eastern Basins of the Witwatersrand Gold Fields. Gauteng Province

APPLICANT: Department of Water and Sanitation (DWS)

LOCATION: The project area is located east of the Springs CBD at Grootvlei Mine Shaft No. 3 and southeast of the Germiston CBD on the Western portion of the East Rand Proprietary Mines.

COORDINATES: 28°10'56.877"E, 26°13'3.277"S and 28°29'19.461"E, 26°15'5.173"S

PROPOSED ACTIVITY: TCTA intends to amend the OEMPr to include a new activity which entails installation of 1ML/Day Reverse Osmosis Packaged Units at both Central and Eastern Basins.

REGISTRATION AND COMMENTS:
Kindly find the OEMPR amendment package link enclosed. It is comprised of:

1. Addendum to Eastern and Central Basin OEMPr for Installation of Water Skids.
2. Eastern and Central Basin Application for amendment of OEMPr for Installation of Water Skids.

To ensure that your comments are captured and responded to, kindly submit your name, contact details, and reason for your interest and issues/concerns, in writing through to the below email address within 30 days from the date of this notice 31 March 2025. Please note that the 30 days will end on 15 May 2025.

CONTACT PERSON: Mrs Sophia Tlale
Cell: 076 140 8653
EMAIL: OEMPR@tcta.co.za
ADDRESS: Trans-Caledon Tunnel Authority (TCTA)
PO Box 10335
CENTURION
0046

forestry, fisheries & the environment

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

APPLICATION FORM FOR AMENDMENT OF AN ENVIRONMENTAL MANAGEMENT PROGRAMME IN TERMS OF REGULATION 37 OF THE EIA REGULATIONS, 2014, AS AMENDED

Application for amendment to the EMPr in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

IMMEDIATE AND SHORT-TERM INTERVENTIONS FOR THE TREATMENT OF ACID MINE DRAINAGE IN THE WESTERN CENTRAL AND EASTERN BASINS OF THE WITWATERSRAND GOLD FIELDS, GAUTENG PROVINCE

Indicate if the **DRAFT** report accompanies the application

Yes X ☐
No ☐

PRE-APPLICATION CONSULTATION

Was a pre-application meeting held	Yes		No	X
Date of the pre-application meeting	04 June 2024 and 18 February 2025			
Reference number of pre-application meeting held	2024-05-0023			
Was minutes compiled and submitted to the Department for approval	Yes		No	**X**

A copy of the pre-application meeting minutes must be appended to this application as **APPENDIX 1**.

Kindly note the following:

1. This form must be used to apply for the Amendment of an Environmental Management Programme in terms of Regulation 37 where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant/Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms/legal
3. An application fee is applicable (refer to **Section 2**). Proof of payment must accompany this application. The application will not be processed without proof of payment unless one of the exclusions provided for in the Fee Regulations is applicable AND such information in the exclusion section of this application form has been confirmed by this Department.
4. A cover letter on your company letterhead indicating the nature of this application must be appended to this form i.e. application for amendment of the Environmental Management Programme.
5. An electronic copy of the signed application form must be submitted of both the Applicant and EAP.
6. This form must be marked ***"for Attention: Chief Director: Integrated Environmental Authorisations"*** and submitted to the Department at the format as prescribed in the process to upload documents form.
7. The required information must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing. A legible font type and size must be used when completing the form. The font size should not be smaller than 10pt (e.g. Arial 10).
8. Where applicable black out the boxes that are not applicable in the form.

9. The use of the phrase “not applicable” in the form must be done with circumspection. Where it is used in respect of material information that is required by the Competent Authority for assessing the application, this may result in the rejection of the application as provided for in the Regulations.
10. Unless protected by law, all information contained in and attached to this application, will become public information on receipt by the Competent Authority. Upon request during any stage of the application process, the Applicant / EAP must provide any registered interested and affected party with the information contained in and attached to this application.
11. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report and declaration of interest of the specialist must also be submitted.
12. Please note that this form must be copied to the relevant Provincial Environmental Department(s).
13. Certified copy/ies of the Environmental Authorisation and all subsequent Amendments thereto, if applicable must be attached to this application as **APPENDIX 3**. Should a certified copy/ies of the Environmental Authorisation and subsequent Amendments thereto not be available an original commissioned Affidavit/Affirmation under oath undertaken by the must be appended to this application form.
14. Certified copy/ies of the Environmental Management Programme and all subsequent Amendments thereto, if applicable must be attached to this application as **APPENDIX 4**.
15. Certified copy/ies of environmental audit reports, if applicable must be attached to this application as **APPENDIX 5**.
16. Should a certified copy/ies of the documents referred to under point 15, 16 and 17 above not be available, an original commissioned Affidavit/Affirmation under oath undertaken by the Applicant must be appended to this application form.
17. An application for the Amendment of an Environmental Management Programme lapses if the applicant fails to meet any of the timeframes prescribed in terms of the EIA Regulations, 2014, as amended.

Departmental Details

Online Submission only:
https://sfiler.environment.gov.za:8443/.

Click **https://www.dffe.gov.za/documents/forms/legal** for guidance document which must be complied with in order to upload/submit files to this Competent Authority.

Physical address:
Department of Forestry, Fisheries and the Environment
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

For Submission enquiries: Contact the Directorate: IEA Strategic Support, Coordination and Reporting at:
Email: EIAApplications@dffe.gov.za

For EIA related implementation queries:
Email: EIAAdmin@dffe.gov.za

For EIA Related Interpretation queries in terms of the Listed Activities:
Email: IQ@dffe.gov.za

For SIP confirmation, please contact the SIP coordinator at the below contact details:

- Mr Alvino Wildschutt-Prins
  Programme Manager: Infrastructure Pipeline Development & Management
  SIP Programme Management Office
  Cell: 072 650 2249
  Email: alvino@presidency.gov.za
- Mr Avik Singh, Infrastructure Project pipeline (SIP Support)
  AvikS@idc.co.za

1. COMPETENT AUTHORITY

Identified Competent Authority to consider the application:	National Department of Forestry, Fisheries and the Environment
Reason(s) in terms of S24C of NEMA:	Environmental Authorisation issued by the DFFE (Previously DEA) in 2013 and the applicant is a national department.

2. GENERAL INFORMATION

Name of the Applicant:	Department of Water and Sanitation		
RSA Identity/ Passport Number:	N/A		
Name of contact person for applicant (if other):	Sophia Tlale		
RSA Identity/ Passport Number:	6404141007185		
Responsible position, e.g. Director, CEO, etc.:	N/A		
Company/ Trading name (if any):	N/A		
Company Registration Number:	N/A		
BBBEE status:	N/A		
Physical address:	PO BOX 10335 Centurion 0046		
Postal address:			
Postal code:		Cell:	0761408653
Telephone:		Fax:	
E-mail:			

Name of the landowner:	Trans-Caledon Tunnel Authority		
Name of contact person for landowner (if other):	Sophia Tlale		
Postal address:	PO Box 10335, Centurion		
Postal code:	0046	Cell:	076 140 8653
Telephone:	012 683 1536	Fax:	-
E-mail:	stlale@tcta.co.za		

Name of Person in control of the land:	Same as landowner		
Name of contact person for person in control of the land:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	

E-mail:	

In instances where there is more than one landowner, please attach a list of those landowners with their contact details as **APPENDIX 6**.

Unless the application is in respect of linear activities or Strategic Infrastructure Projects as contemplated in the Infrastructure Development Act (Act No. 23 of 2014) and where the landowner is not the applicant, written consent of landowner/s must be submitted and attached as **APPENDIX 6**.

Provincial Environmental Authority:	Gauteng Department of Agriculture and Rural Development		
Name of contact person:	Matilda Gasela		
Postal address:	Postal: PO Box 8769, Johannesburg		
Postal code:	2001	Cell:	011 240 2619
Telephone:	011 240 2500/3457	Fax:	
E-mail:	ntshepiseng.moloi@gauteng.gov.za		

Local Municipality:	City of Ekurhuleni		
Name of contact person in (Environmental Section)	Dorcus Modiba		
Postal address:	Private Bag X1069, Germiston		
Postal code:	1400	Cell:	-
Telephone:	011 999 8184	Fax:	-
E-mail:	dorcus.modiba@ekurhuleni.gov.za		

In instances where there is more than one Local/Provincial Authority involved, please attach a list of those Local/ Provincial Authorities with their contact details as **APPENDIX 7.**

3. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

Company of Environmental Assessment Practitioner:				
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)		Percentage Procurement recognition	
EAP name:				
EAPASA Registration Number				
EAP Qualifications:				
Professional affiliation/registration:				
Physical address:				
Postal address:				
Postal code:		Cell:		
Telephone:		Fax:		
E-mail:				

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

If appointed, the declaration of independence of the EAP and undertaking under oath or affirmation that all the information submitted or to be submitted for the purposes of the application is true and correct must be submitted as **APPENDIX 8**.

4. DETAILS OF IMPLEMENTATION OF PREVIOUS ENVIRONMENTAL AUTHORISATION/ENVIRONMENTAL MANAGEMENT PROGRAMME

Was the activity commenced with during the validity period of the environmental authorisation? If yes, please describe the implementation of the Environmental Authorisation and previous Environmental Management Programme to date:	YES	
DWS received an Environmental Authorisation (EA) with reference number 12/12/20/2403 for the installation of an Acid Mine Drainage Treatment Plant at the Eastern Basin and Central Basin in Springs and Germiston respectively. The EA was received on the 7th of January 2013 from the DFFE. Construction commenced in 2014 in the Central Basin and in 2016 in the Eastern Basin.		

5. AMENDMENTS APPLIED FOR AND RELATED INFORMATION

PLEASE NOTE THAT THE AMENDMENTS BEING APPLIED FOR CAN ONLY FALL WITHIN THE AMBITS OF REGULATION 37.

Describe the amendments that are being applied for:
The purpose of this amendment is to amend the current OEMPr for the Eastern and Central Basins to reflect the new activities that are planned to optimise on the use of the water resource. The amendment entails the installation of a 1Ml/day packaged reverse osmosis plant at Central and Eastern Basins, this will be adding on the current activities at these plants. The new portable skid footprint will be of an area of 388.5m2

Please provide the reasons and/or a motivation for the application for amendment:
The primary motivation for this amendment is to mitigate the high costs associated with using potable water for lime mixing for neutralisation. This initiative involves the recycling and reuse of water that would otherwise be deemed unsuitable for discharge into the environment.

6. ENVIRONMENTAL IMPACTS

Describe any negative environmental impacts that may occur if the application for amendment of the Environmental Management Programme is granted, amongst others information on any increases in air emissions, waste generation, discharges to water and impacts of the natural or cultural environment must be included.

If the application for the amendment of the Operational Environmental Management Programme Report (OEMPR) is granted, no significant negative environmental impacts are anticipated. The proposed changes are designed to enhance sustainability by improving water efficiency within the treatment process. However, to ensure a comprehensive assessment, the following key environmental aspects have been considered:

- **Air Emissions** – The amendment does not introduce any new processes that would result in increased air emissions. The existing treatment plant operations remain unchanged, and no additional combustion processes or volatile emissions sources are being introduced, it aligns to the national and global climate change.
- **Waste Generation** – The proposed amendment does not contribute to any additional waste generation. Instead, it promotes resource efficiency by enabling the reuse of water within the lime mixing process, thereby reducing dependency on external potable water supplies without producing additional solid or liquid waste. The sludge will be brine resulting from extraction from water that is high in salts.
- **Discharges to Water** – There will be no adverse impact on water quality or discharge volumes. The amendment supports improved water conservation and reuse by reducing the withdrawal of potable water and encouraging internal recycling, thereby minimizing the plant's reliance on municipal or external water sources.
- **Impacts on the Natural Environment** – No additional land disturbance, habitat destruction, or biodiversity impacts are expected. The amendment does not involve any expansion of infrastructure or modifications that would negatively affect local ecosystems.
- **Impacts on the Cultural Environment** – There are no anticipated impacts on cultural or heritage resources, as the amendment strictly pertains to process efficiency improvements within the existing facility.

Overall, the proposed amendment aligns with sustainable environmental practices by optimising water use without introducing any negative environmental consequences. Therefore, the implementation of this amendment is expected to have a neutral or positive environmental impact rather than contributing to additional emissions, waste, or ecological disturbances.

Describe any negative environmental impacts that may occur if the application for amendment is not granted.
If the proposed amendment is not granted, several environmental impacts may arise, particularly concerning water conservation and resource management. One of the primary concerns is the misuse of potable water, which should be reserved for human consumption and essential domestic purposes. Currently, potable water is being utilised for lime mixing within the treatment process, a practice that is neither sustainable nor efficient. Given the ongoing water shortages in the Gauteng province, this continued use of drinking water for industrial processes exacerbates existing supply challenges, placing further strain on already a limited resource. Without the proposed amendment, the treatment plants will be unable to implement a water recycling systems that would allow for the reuse of process water in lime mixing for neutralisation. This would result in an unnecessary depletion of potable water resources, reducing the availability of clean drinking water for communities. Additionally, continued reliance on potable water for lime mixing leads to higher operational costs and increased energy consumption associated with water treatment and supply. Over time, this could contribute to greater environmental degradation, including excessive water extraction from natural sources, potential ecosystem disruptions, and heightened carbon emissions from water distribution and purification processes. Therefore, granting the amendment is essential to ensuring a more sustainable and responsible approach to water usage, reducing the treatment plant's impact on local water supplies, and promoting long-term environmental stewardship.

Describe any positive environmental impacts that may occur if the application for amendment is granted, amongst others information on any reduction in the ecological footprint, air emissions, waste generation and discharges to water must be included.

If the application for the amendment of the Operational Environmental Management Programme (OEMPr) is granted, several positive environmental impacts will be realised, contributing to more sustainable water and resource management.

- **Reduction in Ecological Footprint** – By optimising the use of available water resources, the amendment significantly reduces the ecological footprint of the treatment plant. The shift from using potable water for lime mixing to recycling and reusing process water aligns with global best practices in sustainable water management, minimizing unnecessary water extraction from natural sources. This ensures that ecosystems dependent on these water sources remain undisturbed, preserving biodiversity and promoting environmental resilience.
- **Preservation of Potable Water for Critical Uses** – The amendment directly supports water conservation efforts by prioritizing potable water for human consumption and essential services. Given the ongoing water shortages in Gauteng, this measure helps to ensure water security for local communities, industries, and emergency services, reducing the risk of supply interruptions and promoting equitable water distribution.
- **Alignment with Sustainable Resource Use and Climate Action Goals** – Encouraging the reuse of water within industrial processes demonstrates a commitment to sustainability, aligning with national and international environmental goals. This initiative reduces strain on local water resources, fosters more responsible industrial practices, and supports global efforts to combat water scarcity and climate change through improved resource efficiency.

Overall, granting the amendment will enable the implementation of a more responsible and sustainable approach to water use, ensuring long-term environmental benefits while reducing the facility's impact on local water supplies and ecosystems.

7. AUTHORISATION FROM OTHER GOVERNMENT DEPARTMENTS

Are any permission, licenses or other authorisations required from any other departments before the requested amendments can be effected?		NO

If yes, please complete the table below.

Name of department and contact person	Authorisation required	Authorisation applied for (Yes/ No)

8. RIGHTS OR INTERESTS OF OTHER PARTIES

In your opinion, will this proposed amendment adversely affect the rights and interests of other parties?		NO
Please provide a detailed motivation of your opinion.		

NOTE: The Department is entitled to request further information if it believes it is necessary for the consideration of the application. If the application is for a substantive amendment or if the rights or interests of other parties are likely to be adversely affected, the Department will instruct the applicant to conduct a public participation process and to conduct any investigations and assessments that it deems necessary.

9. LIST OF APPENDICES

		SUBMITTED	
APPENDIX 1	Copy of the pre-application meeting minutes	YES	
APPENDIX 2	Proof of Payment/Motivation for exclusion	YES	
APPENDIX 3	Certified copy/ies of the Environmental Authorisation and all subsequent Amendments thereto or original commissioned Affidavit/Affirmation under oath	YES	
APPENDIX 4	Certified copy/ies of the Environmental Management Programme and all subsequent Amendments thereto or original commissioned Affidavit/Affirmation under oath	YES	
APPENDIX 5	Certified copy/ies of the Environmental Audit Reports or original commissioned Affidavit/Affirmation under oath	YES	
APPENDIX 6	List of land owners (with contact details)		NO
APPENDIX 7	List of Local/Provincial Authorities (with contact details)		NO
APPENDIX 8	Declaration of independence of the EAP and undertaking under oath or affirmation, if appointed		NO

10. DECLARATION

I, Sophia Tlale, declare that I will comply with all my legal obligations in terms of this application and provide accurate information to everyone concerned in respect to this application.

PP

Signature of the Applicant:

Trans Caledon Tunnel Authority

Name of Company or Organisation:

31 March 2025

Date:

APPENDIX 1

COPY OF THE PRE-APPLICATION MEETING MINUTES

APPENDIX 2

PROOF OF PAYMENT/ MOTIVATION FOR EXCLUSION

The applicant is an organ of state (DWS)

APPENDIX 3

CERTIFIED COPY/IES OF THE ENVIRONMENTAL AUTHORISATION AND ALL SUBSEQUENT AMENDMENTS THERETO OR ORIGINAL COMMISSIONED AFFIDAVIT/AFFIRMATION UNDER OATH

APPENDIX 4

CERTIFIED COPY/IES OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND ALL SUBSEQUENT AMENDMENTS THERETO OR ORIGINAL COMMISSIONED AFFIDAVIT/AFFIRMATION UNDER OATH

APPENDIX 5

CERTIFIED COPY/IES OF ENVIRONMENTAL AUDIT REPORTS OR ORIGINAL COMMISSIONED AFFIDAVIT/AFFIRMATION UNDER OATH

APPENDIX 6

LIST OF LAND OWNERS AND THEIR WRITTEN CONSENT

APPENDIX 7

LIST OF LOCAL/PROVINCIAL AUTHORITIES

APPENDIX 8

DECLARATION OF THE EAP

I, _____, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 14 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

- I have a vested interest in the proposed activity proceeding, such vested interest being:

  _____

  _____

  _____

  _____

_____

Signature of the environmental assessment practitioner

_____

Name of company:

_____

Date

UNDERTAKING UNDER OATH/ AFFIRMATION

I, _____, swear under oath/affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the environmental assessment practitioner

Name of company

Date

Signature of the commissioner of oaths

Date

ADDENDUM TO OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMME

EASTERN BASIN AND CENTRAL BASIN TREATMENT PLANT

TCTA

DOCUMENT DETAILS

REFERENCE:	12/12/20/2403 09/07/2024 18/02/2025
DOCUMENT TITLE:	ADDENDUM TO OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMME: TCTA EASTERN BASIN AND CENTRAL BASIN TREATMENT PLANT

DOCUMENT CONTROL

	NAME	SIGNATURE	DATE
COMPILED:	Sophia Tlale		2025/02/26
CHECKED:	Nompumelelo Msezane		2025/03/19
AUTHORIZED:	Goitseone Kgwele		2025/03/26

REVISION AND AMENDMENTS

REVISION DATE:	REV #	DESCRIPTION
2025/02/26	ORIGINAL DOCUMENT	TCTA Eastern Basin And Central Basin Treatment Plant: Addendum To Operational Environmental Management Programme – Draft Report

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Abbreviations

AMD	:	Acid Mine Drainage
DFFE	:	Department of Forestry, Fisheries and Environment (formally DEA)
DWS	:	Department of Water and Sanitation (formally DWA / DHSWS)
EA	:	Environmental Authorisation
EAP	:	Environmental Assessment Practitioner
ERPM	:	East Rand Proprietary Mines
HDS	:	High Density Sludge
HSE	:	Health, Safety and Environment
OEMPr	:	Operational Environmental Management Programme
TCTA:	:	Trans-Caledon Tunnel Authority

1. BACKGROUND

Trans-Caledon Tunnel Authority (TCTA) was instructed on 06 April 2011 by the National Government, through the then Minister of Water and Environmental Affairs to implement the short-term interventions to treat Acid Mine Drainage (AMD) in the three Basins. This entails the pumping of water from the Western, Central and Eastern Basins to reduce and prevent surface decant. At the AMD plants the water is neutralised in a constructed High-Density Sludge (HDS) treatment plant, before it is released into the neighbouring streams.

- Due to the emergency nature of the intervention required at the time the project was issued with an Environmental authorisation. Towards the end of construction of the AMD treatment plants at the Central Basin and Eastern Basin, Operational Environmental Management Programme (OEMPRs) were submitted to DFFE and were approved. The contents of the OEMPR included a description and diagram of the layout of the plants. The planned intervention is aimed at optimising the AMD plants through adding of a 1ML/day reverse osmosis skid on the Central Basin and the Eastern Basin plants, which will save on the quantity of drinking water used in the AMD treatment and will in turn reduce the associated water costs.

1.1 LOCALITY AND ACTIVITIES AT THE PLANTS

1.1.1 Eastern Basin

The Eastern Basin AMD treatment plant is situated approximately 4,6 km east of the Springs CBD at Grootvlei Mine Shaft No. 3. The area is zoned as industrial and the natural environment immediately surrounding the project is significantly disturbed. As per the EA Exemption, the AMD activities at the Eastern Basin treatment plant include:

- Abstraction of AMD via pumps to Grootvlei Shaft No. 3 or 4 to keep the water from rising above the Environmental Critical Level at 1 280 mamsl.
- Pumping and treating an average of 106 Mℓ/day and a peak of 110 Ml/day.
- Construction of a new HDS treatment plant adjacent to the Grootvlei No.3 shaft
- Investigation and planning for the possible construction of a waste sludge pipeline to the
- Daggafontein, Brakpan and/or Grootvlei TSFs; and

- Construction of a treated water pipeline to a suitable discharge point on the Blesbokspruit.

1.1.2 Central Basin

The Central Basin AMD treatment plant is situated about 1,8 km southeast of the Germiston CBD on the Western portion of the East Rand Proprietary Mines (ERPM) South West Vertical (SWV) Shaft area. The area is zoned as industrial and the natural environment immediately surrounding the project is significantly disturbed. The AMD Central Basin treatment plant activities (Figure 1) include:

- Abstraction of AMD via pumps in the SWV Shaft to keep the water from rising above the Environmental Critical Level at 150 m below the ERPM Cinderella East Shaft collar level (1 617 m) or 1 467 mamsl;
- Pumping and treating an average of 72 Ml/day (peak of 84 Ml/day).
- Construction of a new HDS plant adjacent to the SWV shaft.
- Construction of a waste sludge pipeline to the Crown Knights Gold processing plant.
- Construction of a treated water pipeline to a suitable discharge point on the Elsburgspruit.
- Investigation and planning for a future waste sludge pipeline to the ERGO Brakpan Tailings Storage Facility (TSF).

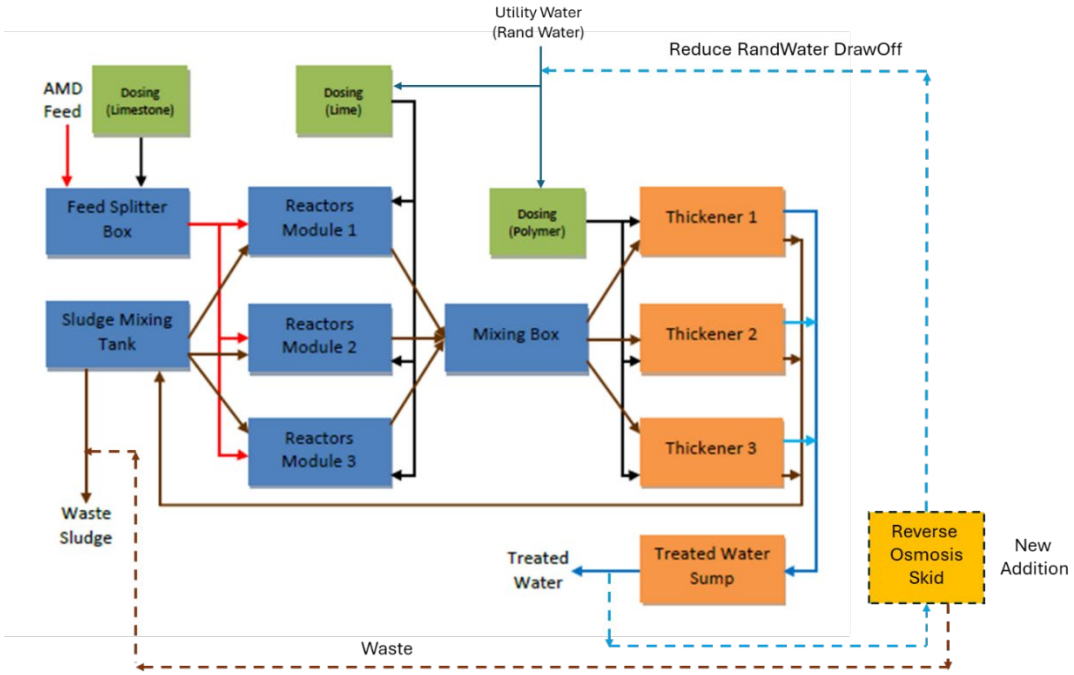

Figure 1: Schematic representation of the AMD treatment process

1.2 PURPOSE OF THE ADDENDUM

The purpose of the addendum is to amend the current OEMPr for the Eastern and Central Basins to reflect the improvements that are planned to optimise on the use of the resources. The amendment entails the installation of a 1Ml/day packaged reverse osmosis plant at Central and Eastern Basins, this will be adding on the current activities at these plants.

2. AMENDMENTS APPLIED FOR AND RELATED INFORMATION

The Department of Water and Sanitation (DWS) received an Environmental Authorisation (EA) with reference number 12/12/20/2403 for the installation of an Acid Mine Drainage Treatment Plant (AMD Treatment Plant) at the Grootvlei mine area at the Eastern Basin and the Central Basin in Germiston. The EA was received on 07 January 2013 from the then Department of Environmental Affairs (DEA). DWS gave TCTA a Directive to implement the AMD Project.

2.1 DESCRIPTION OF THE AMENDMENTS THAT ARE BEING APPLIED FOR:

The amendment entails installation of a 1Ml/day reverse osmosis package plant at Central and Eastern Basin plants.

3. LOCATION

The location of the reverse osmosis plant is indicated in figure 2 outlined in red.

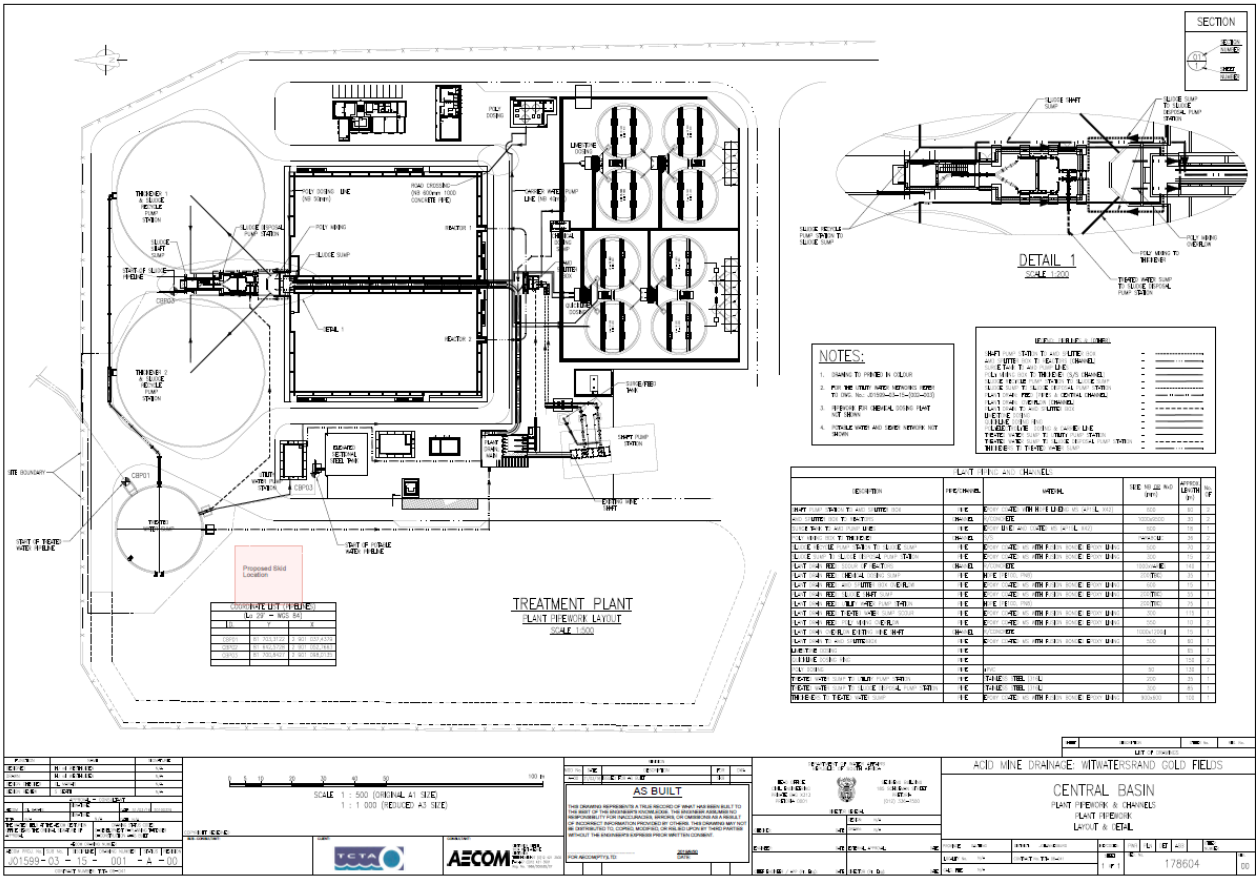

Figure 2: Overall Plant Layout showing location of reverse osmosis plant (red box)

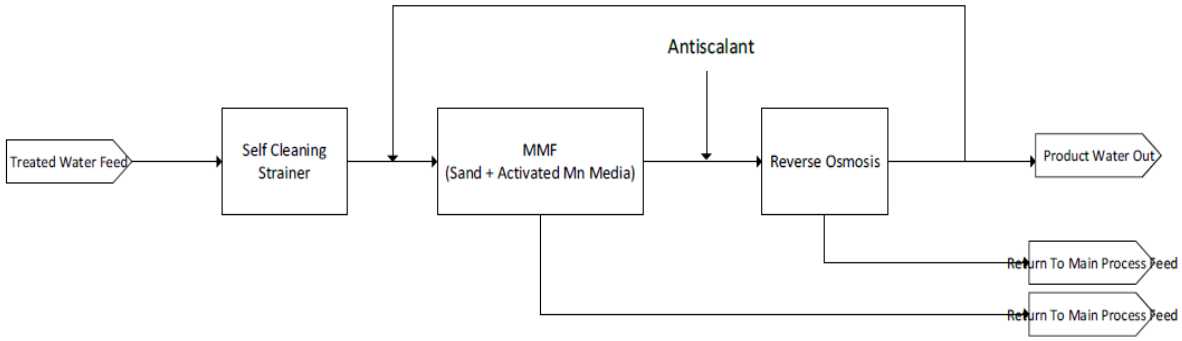

Figure 3: Process Flow Diagram

4. THE TREATMENT PROCESS

The reverse osmosis package plant will treat the effluent from the main Central and Eastern Basin processes to meet the allowed water quality standards. This will be achieved by removing any remaining metals and residual solids through multimedia filtration, followed by the removal of dissolved salts—primarily sulphates—via reverse osmosis (RO).

The RO permeate will then undergo remineralisation through limestone saturation before being transferred to the utility water storage and distribution system of the existing process. The details of each stage are outlined below.

4.1 PLANT FEED

The plant will receive treated water as its feed and will abstract from the existing treated water sump. The media filter pump will draw water directly from the treated water sump.

Due to the calcium sulphate concentration of the treated water, feeding directly to media filters would scale the media. For this reason, a portion of the permeate water from the RO system is recycled to the suction of the filter feed pump to dilute the feed water.

4.2 MANGANESE FILTRATION

The treated water contains metal content, especially Manganese, that must be removed prior to reverse osmosis for adequate performance. This is achieved through filtration using Manganese Dioxide media in pressurised filter vessels. As per the Basis of Design, the system can cater for up to 0.62 mg/L of iron (Fe) and 6.38 mg/L of

manganese (Mn). The feed to the filters is pumped through a self-cleaning strainer to remove any residual solids present in the treated water. The media has a reported attrition loss of 2 % per annum and the integrity of the media is maintained through backwashing. The media may require soaking with dilute hydrochloric acid occasionally if performance loss is significant. Soaking solution will be supplied to the filters using the RO CIP tank and pump.

4.3 SAND FILTRATION

The manganese filters form precipitates that will be removed by pressurised sand filtration. The feed to the sand filters flows directly from the manganese filters via a common manifold. The removal of heavy metals by the manganese filters results in an increase in pH of the water. Provision has been made to correct this to protect the reverse osmosis membranes from scaling should the carbonate levels increase by hydrochloric acid dosing in the filtered water line. The product water from the sand filters flows to the RO feed tanks.

Both types of filters require frequent backwashing to maintain performance. The filters are backwashed individually using the filtered water from its parallel filters. The backwash wastewater is directed to the plant drain sump.

4.4 REVERSE OSMOSIS

The filtered water is pumped through a reverse osmosis system. The RO system produces a permeate stream and a brine stream. The brine stream is directed to the desalination plant drain sump. The drain sump gravity drains to the main plant drain sump via a pipe tie-in to the treated water scour line.

The primary risk when operating an RO system is that of scaling. This is the formation of solids on the membrane which prevent water from passing through the membrane and can cause irreversible damage. Scaling is managed through effective pretreatment and the addition of antiscalant to the RO feed water. This is dosed on the suction of the RO feed pumps.

Any chlorine present in the feed water will damage the RO membranes permanently. Provision for the dosing of SMBS has been made on the suction of the RO feed pump.

With continuous operation, it is expected that the RO membranes will experience some level of scaling and fouling. To regain performance, the skid will undergo CIP

where chemicals are circulated through the membranes to remove the contaminants. The CIP procedure will be manual and utilises a dedicated CIP pump which draws from the CIP tank in which chemicals are made-up.

The RO feed pump is sized to deliver enough pressure to produce the required permeate recycle flow rate. The other portion of the permeate produced is fed to the limestone saturators for stabilization.

4.5 STABILIZATION

The permeate is fed to two limestone saturators operating in parallel. The saturators operate as packed beds with a layer of gravel as the base on top of which is a layer of limestone chips. The permeate enters the vessel at the bottom and flows upwards through the bed, allowing for enough contact time with the limestone to achieve remineralization.

4.6 PRODUCT WATER TRANSFER

The stabilized water overflows from the saturators into a product transfer tank. A low-pressure pump transfers the product to the tie-in at the existing utility water line, previously connected to the treated water sump. The water is transferred through this line to the utility water tank.

5. REASONS AND/A OR MOTIVATION FOR THE APPLICATION FOR AMENDMENT

The OEMPRs are being updated based on the following reasons:

- It has been determined that the cost of lime mixing is significantly high, prompting an investigation into potential cost reduction methods. The on-site production of potable water has been identified as a cost-effective and sustainable solution to mitigate the high costs associated with lime mixing.
- The proposed reverse osmosis (RO) plant will reduce dependency on the use of potable water from Rand Water by generating water for mixing lime, which is the main ingredient of the neutralisation process. Currently the quality of the treated AMD water is not fit for the neutralisation process.
- The planned intervention of optimising the AMD plants through adding of a 1ML/day reverse osmosis skid on the Central Basin and the Eastern Basin plants.

- The benefits that would accompany the optimisation of the plants are:
  - Contribution to the circular economy by Recycling and reusing of water that would otherwise be unfit for discharge into the environment.
  - Reducing the high water bills.
  - A need for a pilot project for the demonstration of reverse osmosis technology before it can be implemented; an intervention that should have been implemented if all went according to the plan.

6. ENVIRONMENTAL IMPACTS

6.6 Description of any negative environmental impacts that may occur if the application for amendment of the Environmental Management Programme is granted

If the application for the amendment of the Operational Environmental Management Programme Report (OEMPR) is granted, no significant negative environmental impacts are anticipated. The proposed changes are designed to enhance sustainability by improving water efficiency within the treatment process. However, to ensure a comprehensive assessment, the following key environmental aspects have been considered:

- **Air Emissions** – The amendment does not introduce any new processes that would result in increased air emissions. The existing treatment plant operations remain unchanged, and no additional combustion processes or volatile emissions sources are being introduced and align with national and global climate change.
- **Waste Generation** – The proposed amendment does not contribute to any additional waste generation. Instead, it promotes resource efficiency by enabling the reuse of water within the lime mixing process for neutralisation, thereby reducing dependency on external potable water supplies without producing additional solid or liquid waste. The sludge will be brine resulting from extraction from water that is high in salts.
- **Discharges to Water** – There will be no adverse impact on water quality or discharge volumes. The amendment supports improved water conservation and reuse by reducing the withdrawal of potable water and encouraging

internal recycling, thereby minimizing the plant's reliance on municipal or external water sources.

- **Impacts on the Natural Environment** – No additional land disturbance, habitat destruction, or biodiversity impacts are expected. The amendment does not involve any expansion of infrastructure or modifications that would negatively affect local ecosystems.
- **Impacts on the Cultural Environment** – There are no anticipated impacts on cultural or heritage resources, as the amendment strictly pertains to process efficiency improvements within the existing facility.

Overall, the proposed amendment aligns with sustainable environmental practices by optimising water use without introducing any negative environmental consequences. Therefore, the implementation of this amendment is expected to have a neutral or positive environmental impact rather than contributing to additional emissions, waste, or ecological disturbances.

6.7 Describe any negative environmental impacts that may occur if the application for amendment is not granted.

If the proposed amendment is not granted, several environmental impacts may arise, particularly concerning water conservation and resource management.

One of the primary concerns is the misuse of potable water, which should be reserved for human consumption and essential domestic purposes. Currently, potable water is being utilised for lime mixing within the treatment process, a practice that is neither sustainable nor efficient. Given the ongoing water shortages in the Gauteng province, this continued use of drinking water for industrial processes exacerbates existing supply challenges, placing further strain on already limited resources.

Without the proposed amendment, the treatment plant will be unable to implement a water recycling systems that would allow for the reuse of process water in lime mixing. This would result in an unnecessary depletion of potable water resources, reducing the availability of clean drinking water for communities and increasing the environmental footprint of the operation.

Additionally, continued reliance on potable water for lime mixing may lead to higher operational costs and increased energy consumption associated with water

treatment and supply. Over time, this could contribute to greater environmental degradation, including excessive water extraction from natural sources, potential ecosystem disruptions, and heightened carbon emissions from water distribution and purification processes.

Therefore, granting the amendment is essential to ensuring a more sustainable and responsible approach to water usage, reducing the treatment plant's impact on local water supplies, and promoting long-term environmental stewardship.

6.8 Anticipated positive environmental impacts that may occur if the application for amendment is granted

If the application for the amendment of the Operational Environmental Management Programme (OEMPr) is granted, several positive environmental impacts will be realised, contributing to more sustainable water and resource management.

- **Reduction in Ecological Footprint** – By optimising the use of available water resources, the amendment significantly reduces the ecological footprint of the treatment plant. The shift from using potable water for lime mixing to recycling and reusing process water aligns with global best practices in sustainable water management, minimizing unnecessary water extraction from natural sources. This ensures that ecosystems dependent on these water sources remain undisturbed, preserving biodiversity and promoting environmental resilience.
- **Preservation of Potable Water for Critical Uses** – The amendment directly supports water conservation efforts by prioritizing potable water for human consumption and essential services. Given the ongoing water shortages in Gauteng, this measure helps to ensure water security for local communities, industries, and emergency services, reducing the risk of supply interruptions and promoting equitable water distribution.
- **Alignment with Sustainable Resource Use and Climate Action Goals** – Encouraging the reuse of water within industrial processes demonstrates a commitment to sustainability, aligning with national and international environmental goals. This initiative reduces strain on local water resources, fosters more responsible industrial practices, and supports global efforts to combat water scarcity and climate change through improved resource efficiency.

Overall, granting the amendment will enable the implementation of a more responsible and sustainable approach to water use, ensuring long-term environmental benefits while reducing the facility's impact on local water supplies and ecosystems.

7. PROPOSED AMENDMENTS TO THE AMD BASIN'S OEMPR

OEMPr REF	Description in Original 2022 OEMPr	Amended / New added information (underlined italics text)
Eastern Basin OEMPr		
Chapter 5	Abstraction of AMD via pumps to Grootvlei Shaft No. 3 or 4 to keep the water from rising above the Environmental Critical Level at 1 280 mamsl. Pumping and treating an average of 106 Mℓ/day and a peak of 110 Ml/day. Construction of a new HDS treatment plant adjacent to the Grootvlei No.3 shaft Investigation and planning for the possible construction of a waste sludge pipeline to the Daggafontein, Brakpan and/or Grootvlei TSFs; and Construction of a treated water pipeline to a suitable discharge point on the Blesbokspruit.	Abstraction of AMD via pumps to Grootvlei Shaft No. 3 or 4 to keep the water from rising above the Environmental Critical Level at 1 280 mamsl. Pumping and treating an average of 106 Mℓ/day and a peak of 110 Ml/day. Construction of a new HDS treatment plant adjacent to the Grootvlei No.3 shaft Investigation and planning for the possible construction of a waste sludge pipeline to the Daggafontein, Brakpan and/or Grootvlei TSFs; and Construction of a treated water pipeline to a suitable discharge point on the Blesbokspruit. *Installation of a 1Ml/day packaged reverse osmosis plant*
Central Basin OEMPr		
Chapter 5	Abstraction of AMD via pumps in the SWV Shaft to keep the water from rising above the Environmental Critical Level at 150 m below the ERPM Cinderella East Shaft collar level (1 617 m) or 1 467 mamsl; Pumping and treating an average of 72 Ml/day (peak of 84 Ml/day);	Abstraction of AMD via pumps in the SWV Shaft to keep the water from rising above the Environmental Critical Level at 150 m below the ERPM Cinderella East Shaft collar level (1 617 m) or 1 467 mamsl;

OEMPr REF	Description in Original 2022 OEMPr	Amended / New added information (underlined italics text)
	Construction of a new HDS plant adjacent to the SWV shaft; Construction of a waste sludge pipeline to the Crown Knights Gold processing plant; Construction of a treated water pipeline to a suitable discharge point on the Elsburgspruit; and Investigation and planning for a future waste sludge pipeline to the ERGO Brakpan Tailings Storage Facility (TSF).	Pumping and treating an average of 72 Ml/day (peak of 84 Ml/day); Construction of a new HDS plant adjacent to the SWV shaft; Construction of a waste sludge pipeline to the Crown Knights Gold processing plant; Construction of a treated water pipeline to a suitable discharge point on the Elsburgspruit; and Investigation and planning for a future waste sludge pipeline to the ERGO Brakpan Tailings Storage Facility (TSF). *installation of a 1Ml/day packaged reverse osmosis plant*