



**BACKGROUND INFORMATION DOCUMENT
FOR THE ACTIVITIES ASSOCIATED WITH THE IMMEDIATE AND
SHORT TERM INTERVENTIONS REGARDING ACID MINE DRAINAGE
IN THE WESTERN, CENTRAL AND EASTERN WITWATERSRAND
BASINS**

DEA REFERENCE NUMBERS: DEA/EIA/0000498/2011 & DEA12/12/20/2403

HIERDIE DOCUMENT IS BESKIKBAAR IN AFRIKAANS OP AANVRAAG

LENCWADI IYATHOLAKALA NGOLWIMI LWESIZULU

TOKOMANE YENA IYAFUMANEGA KASETSWANA

PURPOSE OF THIS DOCUMENT

This Background Information Document (BID) is available to Interested and Affected Parties (I&APs) in order to provide information regarding Trans-Caledon Tunnel Authority (TCTA)'s intention to upgrade and construct Water Treatment Plants for the immediate and short term treatment of Acid Mine Drainage (AMD) in the Western, Central and Eastern Witwatersrand Basins in Gauteng, South Africa. I&APs are invited to provide comments regarding the proposed project. Digby Wells Environmental (Digby Wells) has been appointed by TCTA to undertake the Environmental Impact Assessment (EIA) for the proposed project.

All comments regarding the EIA must be directed to:

DIGBY WELLS ENVIRONMENTAL

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Please ensure that you complete the attached registration and comment form.

PROJECT BACKGROUND

After more than 120 years of deep level gold mining on the Witwatersrand, mining and dewatering has stopped due to the exhaustion of gold resources. The cessation of dewatering has resulted in progressive flooding of the mine voids since 1997. In the Western Basin, the voids filled with acidic water containing heavy metals and started to decant from a number of boreholes and an old shaft in September 2002. It is likely that the Central and Eastern Basins will decant in the future. Acid Mine Drainage (AMD) occurs when ore and waste material, containing sulphides, (e.g. pyrite) are exposed to water and oxygen.

In 2010, Cabinet appointed an Inter-Ministerial Committee (IMC) to address the serious challenges posed by AMD in the Witwatersrand Goldfields area. The IMC tasked a Technical Committee, to investigate the AMD issues. The Technical Committee subsequently appointed a team of experts, who developed and presented a draft report on AMD to Cabinet on 9 February 2011.

The report identified three interventions for the treatment of AMD. An immediate intervention to neutralise acid water already decanting from the Western Basin, a short term intervention, pumping water from the Western, Central and Eastern Basins to prevent surface decant and to neutralise this water before release into the environment and a long term intervention which includes

the neutralisation of acid and removal of salts from AMD water this intervention is currently being investigated by the Department of Water Affairs (DWA) and does not form part of the scope of this project. The immediate and short term interventions are to be the first phases of the long term intervention for AMD. The immediate and short term interventions are the subject of this BID and the required EIA for the proposed project.

The IMC experts report indicated that interventions are urgently required as prevention of AMD decant from the mining basins is considered of national importance. As part of a national mitigation strategy, DWA subsequently issued TCTA with a directive to act as the agent to plan, design and implement immediate and short term measures to manage and control AMD in the Western, Central and Eastern Basins of the Witwatersrand Goldfields.

DESCRIPTION OF THE BASINS

The Western Basin covers the Krugersdorp, Witpoortjie and Randfontein areas. The mine lease areas in this basin extend over about 57km². The Central Basin extends from Durban Roodepoort Deep (DRD) in the west to the East Rand Proprietary Mines (ERPM) in the east. The mine lease areas in this basin extend over about 251km². The Eastern Basin covers the East Rand area, including the towns of Boksburg, Brakpan, Springs and Nigel. The mine lease areas in

this basin extend over about 768km². Refer to the attached map for the areas discussed.

At present the Western Basin is decanting at an old shaft and partially treated and untreated AMD is being released into the Tweelopiesspruit.

The Central and Eastern Basins are not decanting but future decant is expected in 2013 for the Central Basin and 2015 for the Eastern Basin.

In order to prevent decant from these basins and stop the decant at the Western Basin the IMC team of experts report indicated that underground water levels needed to be kept below an Environmental Critical Level (ECL). These levels are:

- Western Basin: 1,550 m amsl;
- Central Basin 1,467 m amsl; and
- Eastern Basin: 1,280 m amsl.

Refer to the attached schematic representation of the AMD and ECL levels.

These levels will prevent future AMD decanting and prevent the flooding of lower level voids such as Gold Reef City tourist mine. Should the proposed project not proceed, untreated AMD will continue to decant in the Western Basin and untreated decant will start in the Central and Eastern Basins.

PROJECT DESCRIPTION

The TCTA undertook a Due Diligence based on the recommendations of the IMC team of experts report. The due diligence report recommended that the following AMD treatment technology and chemical reagent combination be used for the treatment of AMD:

- Oxidation by aeration;
- Pre-neutralisation and metals removal with limestone;
- Final neutralisation and metals removal with lime, produced by the slaking of quicklime; and
- Gypsum crystallisation to remove excess sulphate from the solution.

The proposed AMD treatment plants will be based on the proven and reliable High Density Sludge (HDS) process developed by the CSIR.

The site of the proposed Western Basin AMD water treatment plant for the immediate intervention is situated on the Rand Uranium Property about 5km south-west of Krugersdorp and is accessible from the R28 Main Reef Road.

For the Western Basin, immediate intervention measures include the following:

- Upgrading and retrofitting of the existing Rand Uranium Water Treatment Plant; and

- Bringing the Rand Uranium Water Treatment Plant's additional treatment trains back into operation.

For the short term interventions the following activities need to be undertaken in each of the basins.

Western Basin

The new HDS treatment plant for the short term intervention will be situated on the Randfontein Estates property adjacent to the Rand Uranium property. The activities will include:

- Abstraction of AMD via installed pumps in Rand Uranium's No. 8 Shaft at a depth to achieve the ECL;
- Construction of new HDS treatment plant on the Randfontein Estates site;
- Construction of a treated water pipeline to a suitable discharge point on the Tweelopiespruit; and
- Construction of waste sludge disposal pumps and pipeline to the old opencast pits for the disposal of the sludge from the treatment process.

Central Basin

The proposed Central Basin AMD treatment plant is to be situated about 1,8km east of the Germiston CBD on the western portion of the ERPM South West Vertical Shaft area. The site is bounded on the north by Lower Boksburg Road, on the west and south by Brammer Street and Power Street

respectively, and on the east by a Transnet railway line. The activities will include:

- Abstraction of AMD via installed pumps in the South West Vertical (SWV) Shaft to pump to the ECL;
- Construction of a new HDS plant at 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 possible future waste sludge pipeline to the ERGO Brakpan Tailings Storage Facility (TSF) and, alternatively, to ERPM's old underground workings.

Eastern Basin

The proposed Eastern Basin AMD water treatment plant will be situated at the Grootvlei Mine Shaft No. 3 about 4,6km due east of the Springs CBD. The site is accessible via the R29 Ermelo Road and Grootvaly Road through the suburb of Casseldale. The activities will include:

- Abstraction of AMD via installed pumps in Grootvlei No. 3 shaft at a pump depth to achieve the ECL level or the level;
- 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 or Brakpan TSF; and

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

The project as a whole is referred to as the “Witwatersrand Goldfields AMD Project”. It is to be implemented over the next three to four years.

LEGISLATIVE REQUIREMENTS

As the project activities require the upgrade of existing infrastructure and the development of new infrastructure, an EIA will be required in compliance with the National Environmental Management Act, National Environmental Management Act, 1998 (Act No.107 of 1998) (NEMA) for the authorisation of listed activities contained in GNR 544 of 18 June 2010 (GNR 544) and GNR 545 of 18 June 2010 (GNR 545) published in terms of Sections 24(2) and 24D the NEMA. A waste licence is also required in terms of GNR 718 of 3 July 2009 (GNR 718) published in terms of section 19(1) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA). An integrated application has, therefore, been made to the Department of Environmental Affairs (DEA) as provided for in section 24L of the NEMA and section 44 of the NEM:WA.

The listed activities which have been applied for include Listed activities 9, 11, 13, 18, 23,

28, 37 and 39 of GNR 545 and listed activities 3, 5 and 10 of GNR 545.

Category A waste management activity 19 and Category B waste management activities 1, 6, 7 and 9 as contained in GNR 718 has been identified as waste management activities that require waste management licences.

PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) is an essential component for any EIA process to ensure I&APs are provided with an opportunity to provide comments regarding the proposed project. Digby Wells will facilitate the PPP and any comments received from I&APs will be recorded and will contribute to the decision making process. All I&APs are requested to register with Digby Wells at the contact details provided.

REGISTRATION AS AN I&AP

To ensure that you are registered as an I&AP and to receive updated project information please complete the attached registration form.

Comments and registration forms can be sent to:

DIGBY WELLS ENVIRONMENTAL

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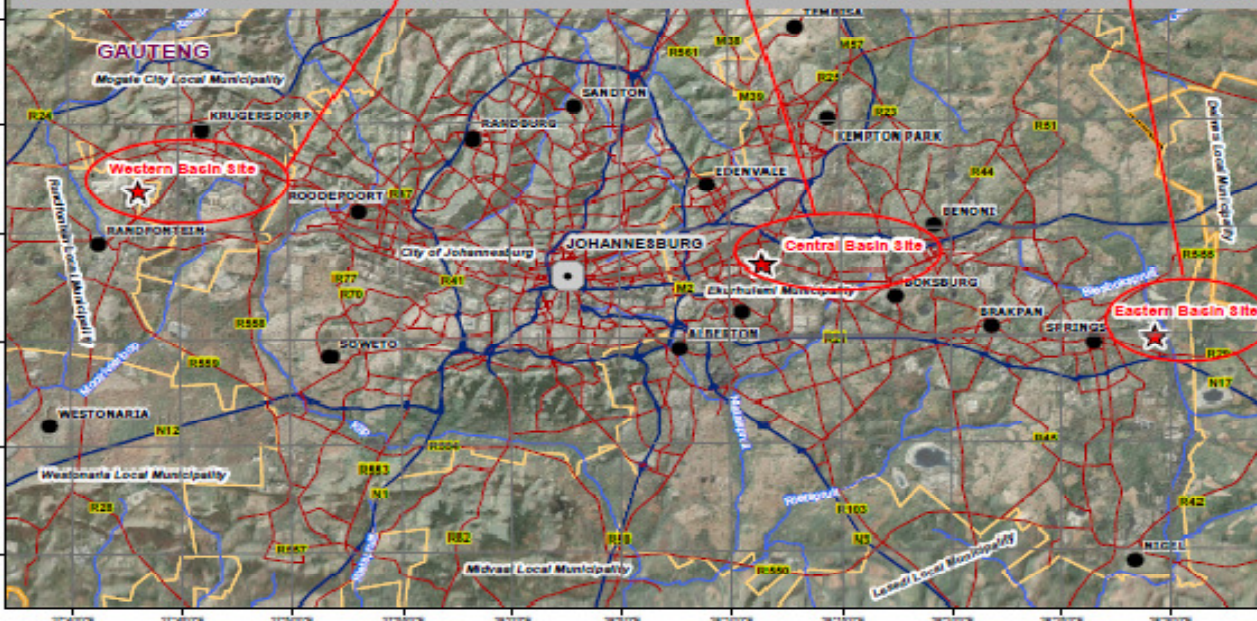
Randburg, 2125

Acid Mine Drainage Project

Western, Central and Eastern Basins

Legend

- ★ Project Sites
- City
- Major Town
- National Road
- Main Road
- Rivers
- Municipalities
- Provincial Boundary



Projection: Transverse Mercator Ref # 4900, 8000, 810, 2011, 522, 538
 Datum: Hartbeespoort, 1994 Revision Number: 1
 Central Meridian: 29°E Date: 08/12/2011

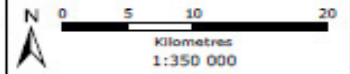
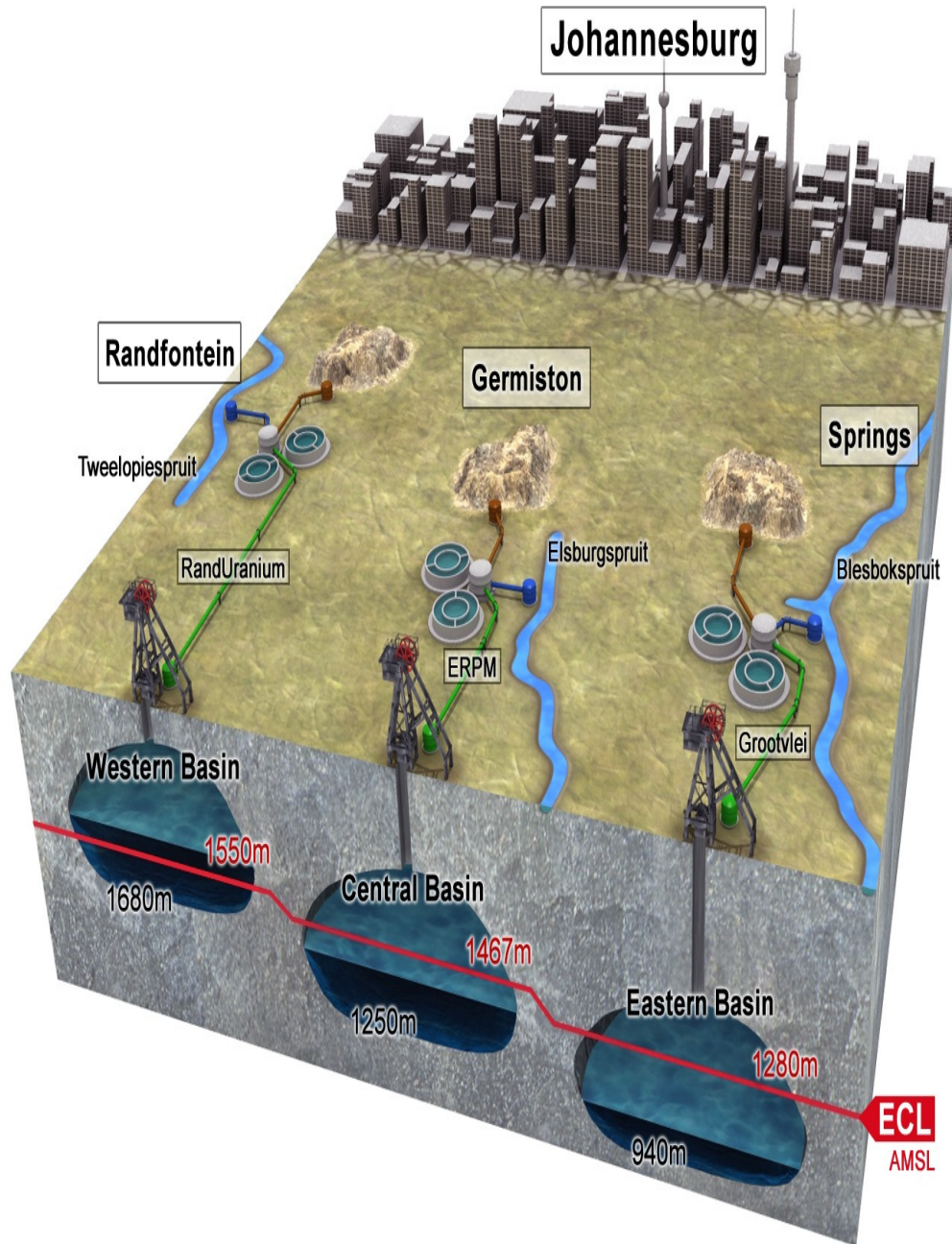


Figure 1: Schematic representation of the AMD and ECL levels



If you know of anyone who should be informed about the project please provide their contact details below:			
First Name:			
Surname:			
Community / Organisation / Farm:			
Physical address:			
Postal Address:		Telephone:	
		Cell:	
		E-mail:	
METHOD OF COMMUNICATION			
What is your preferred method of correspondence? Please tick the appropriate box:	Fax:	E-mail:	
	Post:	SMS:	

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