



# **Anglo American Inyosi Coal (Pty) Limited**

## **Draft**

# **Amended Environmental Management Programme (EMPr) Report**

Compiled in terms of Regulation 31 and Regulation 32 of the Amended Environmental Impact Assessment Regulations, 2014 (Government Notice No. R 326) (EIA Regulations, 2014) and Submitted as contemplated in Regulation 32(a) of Chapter 5 of the EIA Regulations, 2014

**For**

## **The Zibulo Colliery Underground Mining Operations**

**DMRE Reference No: MP 30/5/1/2/2/305 MR**

**August 2020**

Report number: 3339/2020

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**Report Type:** EMPr Amendment Report  
**Project Title:** Anglo American Inyosi Coal (Pty) Ltd: Zibulo Underground Colliery Amended EMPr Report  
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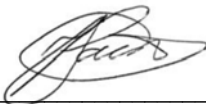
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I hereby declare:

1. I have no vested interest (present or prospective) in the project that is the subject of this report as well as its attachments. I have no personal interest with respect to the parties involved in this project.
2. I have no bias with regard to this project or towards the various stakeholders involved in this project.
3. I have not received, nor have I been offered, any significant form of inappropriate reward for compiling this report.



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## EXECUTIVE SUMMARY

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Zibulo Colliery, which is a Division of Anglo American Inyosi Coal (Pty) Ltd, is an operational underground coal mine located some 17 km southwest of Ogies in the Nkangala District Municipality within the Mpumalanga Province. Zibulo Colliery, formerly Zondagsfontein Project, is a member of the Anglo-American group of companies, and is the first major project to be undertaken by the flagship empowerment company Anglo American Inyosi Coal (Pty) Ltd. Construction of the colliery started in 2008, and full production was reached in 2015. The mine is operated under water use licences 04/B11E/CGIJ/692 (Underground) and 04/B11E/CI/3886 (Overland Pipeline), an approved Environmental Authorisation, Environmental Management Programme (EMPr), (17/2/2/2 NK 7) and DMRE reference number: MP 30/5/1/2/2/305 MR.

Mining at Zibulo Colliery is undertaken by underground mining methods. Run-of-mine (ROM) coal is brought to surface at the mine shafts and is deposited at the coal ROM stockpiling areas, which feeds the beneficiation plant at the Phola Washing Plant complex via an overland conveyor belt. Dirty water management structures are used for the collection, storage and re-use of dirty water generated at the operational underground mining operation. Recharge water to the underground workings is generally left underground and only water required for CM sections is pumped to surface.

During 2019, Anglo American Inyosi Coal (Pty) Limited conducted external environmental audits. These audits found various gaps in, out-dated, non-applicable and incorrectly stated commitments within the approved EMPr of the Zibulo Underground Operation. It was then recommended through the audit process, that the approved EMPr be amended to address the inadequacies/ shortcomings<sup>1</sup>, and mis-aligned commitments, and to ensure that Zibulo Colliery effectively runs its operations while ensuring compliance with all of the required environmental legislations. These amendments were firstly compared with GN 324, GN 325 and GN 327 of the amended Environmental Impact Assessment Regulations, 2014, to establish if new listed activities were triggered. Secondly, an impact assessment was conducted to determine the impact of these amendments on the environment. The suggested amendments do not trigger any new listing notices. Based on the recommendations of the external audit an impact assessment was conducted based on the findings. The outcome of this impact assessment and the mitigation measures suggested was used to determine the proposed new, amended or removal of redundant commitments. These proposed new, amended and removal of redundant commitments was provided to the Department of Mineral Resources and Energy (DMRE).

This document (Anglo American Inyosi (Pty) Limited: Zibulo Colliery – Underground Operation Amended Environmental Management Programme (EMPr) Report) concerns the amendment of various commitments within the approved EMPr as per the previously mentioned external environmental audits. Further, the proposed changes/ additions to impacts to the EMPr, as well as proposed amendments to the Zibulo Underground Environmental Authorisation are also included in this report.

In terms of Regulation 31 of the EIA Regulations, 2014 and the fact that proposed changes/ amendments will result in a change to the scope of the approved Zibulo Colliery's EMPr will result in a change in the nature of impact and that change was not taken into consideration in the initial environmental authorisation application, it has been necessary that the approved Zibulo Colliery's

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<sup>1</sup> Identified as part of the Regulation 34 process (undertaken in terms of the EIA Regulations, 2014)



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EMPr be amended to include the new/ changed commitments, or the removal of redundant commitments. According to Regulation 32 of the EIA Regulations, 2014, assessment of all impacts, advantages and disadvantages related/ associated with the proposed change and measures to ensure avoidance, management and mitigation of impacts associated with such proposed change, together with the amended EMPr must be submitted to the DMRE (competent authority) after having been subjected to public participation for approval. This document is hence submitted in order to meet the requirements of Regulation 32 of the EIA Regulation.

This document was compiled in terms of Regulation 31 and 32 of the amended EIA Regulations, 2014 and is hereby submitted. It must also be noted that no listed activities are triggered in terms of NEMA, 1998 (Act No: 107 of 1998), Amendment of the Environmental Impact Assessment Regulations Listing Notice 1 (GN 327), 2 (GN 325) and 3 (GN 324) of 2014. No waste management licence will be required in terms of the National Environmental Management: Waste Act (NEMWA) (Act No. 59 of 2008) and its regulations.

Environmental baseline data has been obtained through various agencies, pertaining to surface water quantities and qualities, geohydrological data and modelling, topographical analyses, soil surveys, vegetation surveys, wetland surveys and geological conditions. Weather data was acquired from the nearby rainfall station as well as from the South African Weather Service. Historic land use was determined through available data and by visual observations made during various field studies. The data accumulated and analysed is sufficient to gain a baseline indication of the present state of the environment. The use of this baseline study for impact assessments is thus justified, and reliable conclusions could be made. The impacts could arise during and after the proposed project were determined and ranked according to their significance. Based on the impact assessment, recommendations were made for the mitigation of significant negative environmental impacts that will result from the proposed project.

SECTION ONE

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## **Introduction**

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# 1. INTRODUCTION

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## 1.1 WHO IS DEVELOPING THE EMPR AMENDMENT REPORT?

### 1.1.1 Name and Contact Details of the EAP who Prepared the EMPR Amendment Report

<b>EAP:</b>	Mr. P. Fourie (Cand. Sci. Nat.)
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### 1.1.2 Expertise of the EAP who Prepared the EMPR Amendment Report

Geovicon Environmental (Pty) Limited is a geological and environmental consulting company. The company was formed during 1996, and currently has twenty-one years' experience in the geological and environmental consulting field. Geovicon Environmental (Pty) Limited has successfully completed consulting areas in the Mining sector (coal, gold, base metal and diamond), Quarrying sector (sand, aggregate and dimension stone), Industrial sector and housing sector. Geovicon Environmental (Pty) Limited has undertaken contracts within all the provinces of South Africa, Swaziland, Botswana and Zambia. During 2001 Geovicon Environmental (Pty) Limited entered the field of mine environmental management and water monitoring.

Geovicon Environmental (Pty) Limited is a Black Economically Empowered Company with the BEE component owning 60% of the company. Geovicon Environmental (Pty) Limited has three members i.e. O.T Shakwane, J.M. Bate and T.G Tefu.

Mr. O.T Shakwane obtained his BSc (Microbiology and Biochemistry) from the University of Durban Westville in 1994, and completed his honours degree in Microbiology in 1995. Mr O.T Shakwane has also completed short courses on environmental law and environmental impact assessment with the University of North West's Centre for Environmental Management. He has worked with the three state departments tasked with mining and environmental management i.e. Department of Water and Sanitation (Gauteng and Mpumalanga Region), Department of Mineral Resources (Mpumalanga

Region) and Department of Agriculture, Conservation and Environment (Gauteng Region). Mr. Shakwane has been in the consulting field since 2004 and has completed various areas similar to the proposed Anglo American Inyosi Coal (Pty) Ltd Zibulo Colliery's EMPr amendment report project as an environmental assessment practitioner. He is registered with the South African Council for Natural Scientific Professions as a Professional Natural Scientist in terms of the section 20(3) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003). He is also a member of the International Association for Impact Assessment, South Africa.

Over the past years Geovicon Environmental (Pty) Limited has formalised working relationships with companies that offer expertise in the following fields i.e. Geohydrology, Civil and Geotechnical Engineering, Geotechnical Consultancy, Survey and Mine Planning and Soil & Land Use Consultancy. Geovicon Environmental (Pty) Limited is an independent consulting company, which has no interest in the outcome of the decision regarding the EMPr amendment application for the Anglo American Inyosi Coal (Pty) Ltd: Zibulo Colliery – Underground Operation.

## **1.2 WHO WILL EVALUATE AND APPROVE THE EMPR AMENDMENT REPORT?**

Before the proposed project changes can be commenced with, an Environmental Assessment Practitioner (EAP) must be appointed to apply for amendment of the environmental authorization and to compile an amended EMPr as stipulated in Regulation 31 and Regulation 32(1)(a)(iv) of the EIA Regulations, 2014 for the proposed project changes. An environmental impact assessment must be undertaken in support of the amendment of the EMPr. The environmental impact assessment will determine the potential environmental impacts that may result from the proposed EMPr changes and an amended environmental management programme report (this report) has been compiled to provide measures for mitigation against the identified impacts. The above-mentioned amendment must be made to the competent authority in terms of section 24D (1) of NEMA. The Minister responsible for mineral resources is the responsible competent authority for this amendment application and amended EMPr. In view of the above, the amendment for the environmental authorisation for the repositioning of the mine infrastructures is submitted to the Department of Mineral Resources and Energy (DMRE), eMalahleni Regional Office for their consideration and decision making. All changes made in the approved EMPr have been underlined in the amended EMPr.

In the spirit of co-operative governance and in compliance with the requirements of NEMA and the MPRDA, the competent authority will, during the processing of the environmental amendment application, consult with other organs of state that administers laws that relate to matters affecting the environment relevant to this application.

Note that during the public participation process for the proposed project, the EAP will also consult with the below listed state authorities.

The organs of state that are to be consulted may include the following:

- Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)
- Mpumalanga Tourism and Parks Agency (MTPA)
- Department of Water and Sanitation (DWS)

- National Department of Agriculture, Forestry and Fisheries (NDAFF)

Note however that this list is not exhaustive as more organs of state may be identified by the competent authority and EAP during the public participation process.

## **1.3 DETAILS OF THE APPLICANT**

### **1.3.1 Name of the Applicant**

Anglo American Inyosi (Pty) Limited

### **1.3.2 Name of the Project**

Zibulo Colliery Underground: EMPr Amendment Report

### **1.3.3 Postal Address of Applicant**

P. O. Box 440

Ogies

2230

### **1.3.4 Responsible Person**

Mr. Melchior Joseph

### **1.3.5 Contact Person**

Mr. Melchior Joseph

SECTION TWO

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## **Description of the Scope of the Proposed Project**

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## 2. DESCRIPTION OF THE SCOPE OF THE PROPOSED PROJECT

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### 2.1 DESCRIPTION OF THE PROPOSED ZIBULO COLLIERY UNDERGROUNDS' EMPr AMENDMENT

Zibulo Colliery Underground is an operational underground mine situated on various portions of the farms Zondagsfontein 253 IR, Cologne 34 IS, Leewfontein 219 IR, Onverwacht 66 IS, Rietvlei 64 IS, Schoongezicht 218 IR, Smithfield 44 IS, Straffontein 252 IR, Strehla 261 IR, Uitvlugt 255 IR, Boschpoort 211 IR, Darwina Low 254 IR, Dieplaagte 262 IR, Kleinzuikerboschplaat 5 IS, Klipfontein 3 IS, Olga 35 IS, Vanggatfontein 250 IR, Vlakvarkfontein 213 IR, Welgelegen 221 IR, and Zondagsvlei 9 IS situated within the eMalahleni Local Municipality and the Nkangala District Municipality, Mpumalanga Province (Oryx, [2008](#)). Zibulo Colliery is operated under a mining right issued in terms of Section 23 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) (MP 30/5/1/2/2/305 MR) and an Environmental Authorisation (EA) from the Mpumalanga Department of Economic Development, Environment and Tourism (17/2/2/2 NK – 7). Zibulo Colliery Underground Operation is also in possession of two water use licenses: 04/B11E/CGIJ/692 (Underground) and 04/B11E/7383 (Overland water pipeline). Currently the Zibulo Colliery is operational, extracting coal from the no. 2 seam select horizon by underground bord and pillar methods using continuous mining equipment. These reserves are located at depths of between 80m and 130m below surface.

#### 2.1.1 Planned Life of the Project

The current estimated life of Zibulo Colliery – Underground is 11 years.

### 2.2 REASONS FOR THE AMENDMENT OF THE EMPr

Anglo American Inyosi Coal (Pty) Ltd conducts yearly external environmental audits to ensure compliance with the commitments within the approved EMPr and EAs. During the 2019 external environmental audit the inadequacies in terms of Regulation 34 of the EIA Regulations, 2014 (see Table 2-1 below) were identified and it was recommended that the relevant sections/ impacts/ commitments (within the approved EMPr) be updated, removed, amended or reworded (Shangoni, [2019](#)). By amending the NEMA EA and the approved Zibulo Colliery's EMPr (Part 2 amendment, as per the NEMA EIA Regulations, 2014), Anglo American Inyosi Coal (Pty) Ltd can continue mining with updated EMPr commitments that take the current status of the underground mining into account and thus prevent unintentional impacts on the environment and public health and safety. A Part 2 amendment was used as it refers to change of scope as the amendments will either result in an increase or a change in nature of the environmental impacts (South Africa, Environmental Impact Assessment Regulations, [2014](#)).

Anglo American Inyosi Coal (Pty) Ltd is committed to ensure compliance with all relevant national and international laws, regulations and standards.

**Table 2-1: EMPr Audit Findings and Proposed Amendments**

Audit 2019 findings	Amendment Type
<b>EMPr Amendments</b>	
<b>EMPr Inadequacies Identified by Auditors</b>	
<p>Several wetlands were identified during a baseline study in 2005. A follow-up study identified six wetland crossings along the current conveyor route (Wetland Consulting Services, 2014), as licenced in the approved Water Use Licence ("WUL"). Mitigation measures to maintain the integrity of these wetland systems are absent from the EMPr (alignment requirements with WUL). The conveyor crossings represent a linear disturbance within the wetland habitat. The conveyor and the adjacent access road are slightly raised above the surrounding wetland and culverts are used to accommodate flows beneath the access road. This appears to affect the wetlands hydrology through flow impoundment immediately upstream and flow concentration at the culvert outlet points. Areas of flow impoundment and increased saturation are becoming colonised by species such as <i>Typha capensis</i>, at the expense of the naturally occurring moist grassland community. In addition, it is expected that the soils beneath the access road are moderately compressed, which will affect subsurface flow and may lead to a slight increase in surface runoff through the culverts. An increase in concentrated surface flow at the culvert outlets may lead to the formation of preferential flow pathways, and eventually channel erosion. Another impact associated with areas of disturbance such as the conveyor, is the encroachment of alien vegetation and weeds along the route. Management and mitigation measures to maintain the integrity of these wetland systems are absent from the EMPr. Several risk factors pertaining to the conveyor system could impact on the functioning and integrity of the wetlands present. These include increased surface flow and erosion, deteriorating water quality, altering the wetland hydrology including alien encroachment. It is imperative that these environmental impacts associated with the conveyor be updated during a future review of the EMPr and that the recommendations as provided for in the follow-up wetland study (Wetland Consulting Services, 2014) be included as mitigation measures and complied with. At the time of the audit none of the recommendations as recommended within this study had been initiated. Strategies relating to erosion control and water quality monitoring (chemical and biological) along the conveyor route are shortcomings that should be addressed.</p>	<p>These commitments and impacts were not included within the original EMPr and have now been <b>added</b> to the EMPr amendment. By adding commitments that were not part of the original EMPr, an EIA was conducted. The baseline wetland study was used for the EIA (Table 7-3) and new commitments proposed from the wetland study and the EIA. The proposed new commitments are given in Table 8-1.</p>
<p>As per site observations, and further thereto with reference to the Wetland Assessment for Zibulo</p>	<p>These commitments and impacts were not included within the original EMPr and have</p>



Audit 2019 findings	Amendment Type
<p>(Appendix to Biodiversity and Land Management Plan), Digby Wells, it does appear as if portions of the Shaft infrastructure were built within a wetland or in close proximity thereto, identified to have a biodiversity value of High (Digby Wells). A further wetland assessment has been undertaken by Wetland Consulting Services (2017), with such shapefiles being provided for review. As per the shapefiles, as presented below, hillslope seepage wetlands have been delineated adjacent to the vertical shaft and 7.5 MI Dam as well as at the ventilation shaft and stone dust silo. A channelled valley bottom wetland has also been delineated to the south of the site (approximately 45m to the south of the sewage treatment plant). Several risk factors pertaining to the shaft infrastructure could impact on the functioning and integrity of the wetlands present. These include increased surface flow and erosion, deteriorating water quality, altering the wetland hydrology including alien encroachment. It is imperative that these environmental impacts associated with the construction, operational and closure activities be quantified through a follow-up wetland delineation assessment, on-going toxicity monitoring and surface water quality monitoring, and the mitigation measures associated thereto be included in a future review of the EMPr.</p>	<p>now been <b>added</b> to the EMPr amendment. By adding commitments that were not part of the original EMPr, an EIA was conducted. The updated wetland study (Appendix 1) was used for the EIA (Table 7-3) and new commitments proposed from the wetland study and the EIA. The proposed new commitments are given in Table 8-1.</p>
<p>Risks and management related to the management of general-, hazardous- and mineral waste (rock dump) are not included in the EMPr.</p> <ul style="list-style-type: none"> <li>• EMPr does not provide for an assessment of the risks associated with the storage and transport of waste (i.e. general waste, hazardous waste etc.) nor does it provide the associated mitigation and management measures associated thereto.</li> <li>• Management of the rock dump is not adequately discussed in the EMPr.</li> </ul>	<p>These commitments and impacts were not included within the original EMPr and have now been <b>added</b> to the EMPr amendment. By adding commitments that were not part of the original EMPr, an EIA was conducted. Zibulo Colliery's waste management procedures, management of the rock dump and generally accepted waste management procedures were used for the EIA (Table 7-3) and new commitments proposed from these and the EIA. The proposed new commitments are given in Table 8-1.</p>
<p>An informal laydown area was established adjacent to the sub-assembly bay, north of the workshop with the appropriate risks and mitigation measures not provided for within the approved EMPr.</p>	<p>These commitments and impacts were not included within the original EMPr and have now been <b>added</b> to the EMPr amendment. By adding commitments that were not part of the original EMPr, an EIA was</p>

Audit 2019 findings	Amendment Type
	<p>conducted (Table 7-3). It must be noted that only the operational phase for the informal laydown area is considered as it is currently in the operation phase and the closure will form part of the main infrastructure closure impacts. The new commitments are described in Table 8-1.</p>
EMPr Inadequacies and Scope Changes Identified Internally	
<p>It is recommended that a review of the Block/ Infrastructure plan (that was attached to the approved EMP) be done and any gaps in facilities (not shown on the plan) (that do not trigger any additional listed activities) be included in such block plan for submission with the EMP amendment.</p>	<p>The EMPr, EIA and EA have been updated as to ensure that everything is <b>aligned</b> with each other. No environmental impacts and listed activities are triggered with this amendment and only the new commitment was given in Table 8 1. The updated block plan is attached as Appendix 2.</p>
<p>Zibulo Colliery has decided to move the approved infrastructure of Ventilation Shaft No.1 to be adjacent to that of Ventilation Shaft 3. The reason for the relocation of the Ventilation Shaft No. 1 is to ensure better ventilation of the underground workings. Additional modelling was conducted and it was concluded that constructing Ventilation Shaft No. 1 at the proposed new location will ensure improved ventilation.</p>	<p>As Ventilation Shaft No. 1 has been approved in terms of both the NEMA and NWA, no impact assessment was required (as the impacts are similar to that of its original position) and now new or amended commitments are needed. The EMPr was only <b>amended</b> to provide the new location of Ventilation Shaft No. 1. The new location is given in Table 8-1.</p>
<p>Zibulo Colliery is planning to construct a new 23 000 L bulk oil and diesel storage tank on surface (within Zibulo's mining right and on top of Anglo Americans surface rights). This new storage tank will be connected to a 10 000L underground diesel storage tank (connected via a newly drilled borehole) located within the underground workings, a 100 m below the surface. A separate borehole for the pumping of oil will also be drilled, both of the boreholes will be cased. Diesel and oil will be pumped through the respective boreholes to the underground workings. Appendix 4 indicates the location and design of the bulk diesel storage tank. The area where construction, installation and operation will take place within a heavily modified maize field and will thus result in low impacts on the surrounding</p>	<p>As this is a new construction project that was not part of the original EMPr, these commitments and impacts were <b>added</b> to the EMPr amendment. The 23 000 L bulk diesel storage tank will trigger environmental impacts which are provided in the EIA (Table 7-3) and the new commitments are provided in the EMPr</p>

Audit 2019 findings	Amendment Type
environment. The storage tank is situated within a bunded box that prevents leakages into the surrounding environment. The construction of this bulk diesel tank does not trigger any new listing notices and thus no new EA application was required.	(Table 8-1).
Zibulo Colliery proposes to construct a new ventilation shaft (Ventilation shaft number 4) to increase the supply of air to the underground operations. Vent fan no. 4 will ensure that underground mining can continue into the northern areas of the mining area and provide employees with sufficient levels of air. This ventilation fan will be constructed in agricultural fields, on a surface area owned by Anglo American Inyosi Coal (Pty) Ltd, to reduce the impact on the environment.	As this is a new construction project that was not part of the original EMPr, these commitments and impacts were <b>added</b> to the EMPr amendment. The proposed Vent fan no. 4 will trigger environmental impacts which are provided in the EIA (Table 7-3) and the new commitments are provided in the EMPr (Table 8-1).
Possible Impractical Commitments Contained in the EMPr that may Require Removal or Rewording	
The conveyor belts will be kept gentle over the river crossings to minimise potential collection of water at the low point of the conveyor, should wet coal be placed on the conveyor belt. It is unclear what is meant by the phrase "conveyor belts will be kept gentle".	This commitment has been <b>amended</b> to provide an accurate description of what is taking place on-site. The amended commitment is provided in Table 8-1.
Barrier pillars of 100 m should be left between all adjacent mining sections to prevent the migration of groundwater to low-lying areas, during the operational phase.	This commitment has been <b>amended</b> as to comply with the Anglo-American pillar design formulas. The updated impacts are provided in the EIA (Table 7-3) and amended and new commitments given in the EMPr Table 8-1).
Install toe drains at the dirty water dams to intercept most of the seepage and monitor groundwater quality down-gradient of the dirty water dams.	This commitment has been <b>removed</b> as no toe drains were installed. This is due to the fact that the PCD's are lined and toe drains were not required. See Table 8-1.
The eastern side of the conveyor will be enclosed with a Doghouse enclosure.	This commitment has been <b>amended</b> as to align with what is currently constructed at the conveyor and reflect Zibulo's own guidelines and procedures. See Table 8-1.

Audit 2019 findings	Amendment Type
A wall adjacent to Mr Allen's house will be implemented during construction. A noise barrier will be constructed to be 2m above the vent shaft fans at Rietvlei to mitigate the impact on Mr Koos Boshoff's house.	This commitment has been <b>removed</b> as specialist studies indicated that the noise levels at Mr Allen's house is insignificant and no complaints have been received (Table 8-1).
A dust monitoring programme must be implemented that effectively monitors dust related impacts from the project area.	This commitment has been <b>removed</b> as the ventilation fan to which it refers has a very low impact on the air quality and there are no sensitive receptors close by (Table 8-1).
On-going ambient and PM10 monitoring must be implemented with dust monitors concentrated of the west of the site.	This commitment has been <b>removed</b> as the ventilation fan to which it refers has a very low impact on the air quality and there are no sensitive receptors close by (Table 8-1).
Regular inspections of stream crossings and the remainder of the conveyor servitude will be undertaken and any coal spillages cleaned up.	This commitment has been <b>amended</b> to align with the current on-site practises. See Table 8-1.
Continuous monitoring of external user's boreholes and monitoring boreholes at the graben structure will indicate whether a loss in yield has taken place due to mining activities.	This commitment has been <b>removed</b> as recent groundwater modelling indicate that there is no drop in groundwater levels at external users' boreholes or at the graben structure. See Table 8-1.

**Table 2-2: EA Audit Findings and Proposed Amendments**

<b>EA Amendments</b>	
Once the designated areas for waste skips and the planned amounts have been finalized, the mine has to obtain a section 20 application from the DWAF in terms of the Environmental Conservation Act (Act No. 73 of 1989).	This commitment has been <b>removed</b> as this legislation has been repealed and no longer applicable, see Table 8-1.
Prior to the removal of the soils for stockpiling additional sampling and analysis of the soils must be undertaken, to determine their suitability for use during rehabilitation.	This commitment has been <b>amended</b> as it vague in regards to when stockpiling will be conducted (Table 8-1). As no long-term stockpiling is planned during the life of mine, this commitment has been amended to focus on long-term stockpiling of soils, if any, with regards to rehabilitation.
Topsoil and subsoil must be sprayed with dust allaying agent immediately after being stockpiled.	This commitment has been <b>amended</b> as there are no topsoil or subsoil stockpiles at Zibulo Colliery underground. See Table 8-1 for commitments with regards to the possible stockpiling of soils.
There must be a consultation and cooperation with local law enforcement agencies to ensure legal and regulatory compliance on the road.	This commitment has been <b>amended</b> as to align with the practises applied at Zibulo Colliery (Table 8-1).
During construction and operation, haulage roads must be treated with Dust-aside or a similar product to reduce water usage and dust creation.	This commitment has been <b>amended</b> to reflect what is currently happening on-site. There are no haul roads present on site (Table 8-1).
The Expansion Project must link with the Integrated Development Plan (IDP) of the eMalahleni Local Municipality especially with regards to the planning processes to ensure adequate water supply and other programmes.	This commitment has been <b>removed</b> as no expansion project is planned. See Table 8-1.
Construction vehicles and those transporting materials and goods must be inspected to ensure that these are in good working conditions and not overloaded not to spill any coal or product on the road.	This commitment has been <b>removed</b> as no coal is transported by truck and no construction vehicles are on the main roads. See Table 8-1.
Where any of the applicant's contact details change, including the name of the responsible person, the	This commitment has been <b>amended</b> as

<p>physical or postal address and/ or telephonic details, the applicant must notify the Department as soon as the applicant knows the new details. The environmental authorisation still indicates Mr Henri Niewoudt as the contact person.</p>	<p>the contact person should state Melchior Joseph (Table 8-1).</p>
<p>Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence.</p>	<p>This commitment has been <b>amended</b> by rewording it (Table 8-1). Zibulo Colliery will inform the Department of the commencement of any new activity.</p>



SECTION THREE

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## **Advantages and Disadvantages Associated with the Proposed Amendments**



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### **3. ADVANTAGES AND DISADVANTAGES ASSOCIATED WITH THE PROPOSED AMENDMENTS**

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This section of the report will describe the negative and the positive environmental impacts that may occur if the application for amendment is granted, amongst others information on any increases in air emissions, waste generation, discharges to water and impacts of the natural or cultural environment.

#### **3.1 ADVANTAGES ASSOCIATED WITH THE PROPOSED AMENDMENT OF THE EMPr**

The following are the advantages of amending the approved EMPr commitments:

- Reduction in the safety risks due to the elimination of the safety hazards.
- Consistency between what is on-site, activities being conducted and the IWUL. This ensures that Zibulo Colliery can control all aspects of the environment and manage all impacts accordingly.
- The impacts on the wetland during construction, operation and post closure have now been added to the EMPr. This includes the mitigation measures that will protect the current artificial wetland as well as ensure proper rehabilitation of the affected and destroyed wetlands.
- Continuation of mining with lesser risk to the public and communities around the mine including the land owners and land occupiers on visual, noise, and air quality and biodiversity impacts.

#### **3.2 DISADVANTAGES ASSOCIATED WITH THE PROPOSED AMENDMENT OF THE EMPr**

The following are the disadvantages of amending/ adding the approved EMPr commitments. It must be noted that these impacts are very low and associated with the construction of the 23 000 L bulk diesel storage tank. All other impacts will be the same, if not less as the current impacts that underground mining at Zibulo Colliery has.

- Loss of topsoil through compaction.
- Decrease of surface water runoff to the local streams and wetlands.
- Visual impact.
- Generation of general and household waste during the construction and decommissioning phases.

SECTION FOUR

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## **Policy and Legislative Context**

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## **4. POLICY AND LEGISLATIVE CONTEXT**

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### **4.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996 (ACT NO. 108 OF 1996)**

Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) states that everyone has the right:

- a) to an environment that is not harmful to their health or well-being; and
- b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;
  - (i) prevent pollution and ecological degradation;
  - (ii) promote conservation; and
  - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

In terms of Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being. In addition, people have the right to have the environment protected, for the benefit of present and future generations, through applicable legislations and other measures that prevent pollution, ecological degradation and promote conservation and secure ecologically sustainable development through the use of natural resources while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into the overall project in order to fulfil the requirements of Section 24 of the Constitution. In view of the above, a number of laws pertaining to environmental management were promulgated to give guidance on how the principles set out in section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) would be met. Below are laws applicable to the proposed project that was promulgated to ensure that section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) is complied with.

### **4.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998)**

Section 24(1) of the NEMA states:

“In order to give effect to the general objectives of integrated environmental management laid down in this Chapter [Chapter 5], the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of the Department of Mineral Resources, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act.”

In order to regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental

impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto, Regulations (EIA Regulations, 2014) were promulgated. These Regulations took effect from the 4<sup>th</sup> of December 2014.

In addition to the above, Section 28 of the NEMA includes a general "Duty of Care" whereby care must be taken to prevent, control and remedy the effect of significant pollution and environmental degradation. This section stipulates the importance to protect the environment from degradation and pollution irrespective of the operations taking places or activities triggered/ not triggered under No. 327, No. 325 and No. 324.

In view of the above and since no listed activities were triggered by the changes of the Zibulo Colliery's EMPr amendment no new applications will be required. The amended NEMA EIA Regulations of December 2014 determines requirements to be met in order to obtain an amendment for the above-mentioned commitments. This report has therefore been compiled in compliance with the above regulations.

#### **4.3 NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT, 2004 (ACT NO. 39 OF 2004)**

The National Environmental Management: Air Quality Act (Act No.39 of 2004) (NEM:AQA) focuses on reforming the law regulating air quality in South Africa in order to protect the environment through the provision of reasonable measures protecting the environment against air pollution and ecological degradation and securing ecological sustainable development while promoting justifiable economic and social developments. This Act provides national norms and standards regulating air quality management and control by all spheres of government. These include the National Ambient Air Quality Standards (NAAQS) and the National Dust Control Regulations (NDCR). The standards are defined for different air pollutants with different limits based on the toxicity of the pollutants to the environment and humans, number of allowable exceedances and the date of compliance of the specific standard.

On 22 November 2013 the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN R893 in Governmental Gazette No 37054, in terms of Section 21(1)(b) of the NEM:AQA.

The proposed amendment will not trigger any of the activities listed under the above-mentioned Regulations, however Anglo American Inyosi Coal (Pty) Ltd: Zibulo Colliery: Underground Operation must ensure that emissions from their activities complies with the standards as set in the above-mentioned regulations.

#### **4.4 THE NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT NO. 25 OF 1999)**

The National Heritage Resources Act (Act No. 25 of 1999) (NHRA) focuses on the protection and management of South Africa's heritage resources. The governing authority for this act is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features such as graves, trees, archaeology and fossil beds are protected as well as culturally significant

symbols, spaces and landscapes. Section 38 of the NHRA stipulates the requirements a developer must undertake prior to development. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed.

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon.

The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. A Heritage Impact Assessment (HIA) was conducted before the Zibulo Colliery commenced, hence the report has been used to determine whether any heritage resources are located within the area.

#### **4.5 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004) (NEMBA)**

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and protection of South Africa's biodiversity within the framework established by NEMA. The Act aims to legally provide for biodiversity conservation, sustainable, equitable access and benefit sharing and provides for the management and control of alien and invasive species to prevent or minimize harm to the environment and indigenous biodiversity. The Act imposes obligations on landowners (state or private) governing alien invasive species as well as regulates the introduction of genetically modified organisms. The Act encourages the eradication of alien species that may harm indigenous ecosystems or habitats. The NEMBA ensures that provision is made by the site developer to remove any aliens which have been introduced to the site or are present on the site.

The NEMBA also provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value.

The Act supports South Africa's obligations under sanctioned international agreements regulating international trade in specimens of endangered species, and ensures that the utilization of biodiversity is managed in an ecological sustainable way.

The EMPr Amendment has been compiled to ensure that all applicable requirements prescribed in the NEMBA are complied with.

#### **4.6 MPUMALANGA NATURE CONSERVATION ACT, 1998 (ACT NO. 10 OF 1998)**

The Mpumalanga Nature Conservation Act, No. 10 of 1998, aims to consolidate and amend the laws relating to nature conservation within the Province and to provide for matters connected therewith. Provincial legislation relevant to biodiversity conservation comprises of two Provincial Acts, the Mpumalanga Nature Conservation Act (Act 10 of 1998) and the Mpumalanga Tourism and Parks Agency Act (Act 5 of 2005). In relation to nature conservation, the Province has developed the Mpumalanga Biodiversity Sector Plan (MBSP). This plan has been jointly developed by the Mpumalanga Tourism and Parks Agency (MTPA) and the Department of Agriculture, Rural

Development, Land and Environmental Affairs (DARDLEA). The MBSP takes its mandate from the South African Constitution, the National Biodiversity Act (10 of 2004) and the Mpumalanga Nature Conservation Act 10 of 1998. Areas identified under the MBSP as sensitive were identified and where applicable measures has been proposed for ensuring that the areas are not degrade by the proposed project activities.

#### **4.7 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT 28 OF 2002) (MPRDA)**

The Department of Mineral Resources and Energy (DMRE) is responsible for regulating the mining and minerals industry to achieve equitable access to the country's resources and contribute to sustainable development. The Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) requires that an EIA be conducted and that the EMP be drafted for the mitigation of impacts identified during the environmental impact assessment for a mining project. During December 2014, the "One Environmental System" was implemented by Government which initiated the streamlining of the licensing processes for mining, environmental authorisations and water use. Under the One Environmental System, The Minister of Mineral Resources, will issue environmental authorisations and waste management licences in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)(NEMWA), respectively, for mining and related activities. The Minister of Environmental Affairs will be the appeal authority for these authorisations. In view of the above the application for the amendment of the environmental authorisation and the EMPR for the proposed EMPr amendments were submitted to the Department of Mineral Resources as the competent authority.

#### **4.8 NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998 NWA)**

The National Water Act (Act No. 36 of 1998) (NWA) is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof in South Africa. The NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The NWA presents strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. The National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest. Further, an industry can only be entitled to use water if the use is permissible under the NWA. The enforcing authority on water users is the Department of Water and Sanitation (DWS).

Further, Regulation 704 of the NWA deals with the control and use of water for mining and related activities aimed at the protection of water resources.

No application for an integrated water use licence has been submitted to the Department of Water and Sanitation in respect of the amendments made to the EMPr as no water uses were triggered.

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## **4.9 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008(ACT NO. 59 OF 2008)**

The National Environmental Management: Waste Act (NEMWA) requires that all waste management activities must be licensed. According to Section 44 of the NEMWA, the licensing procedure must be integrated with an EIA process in terms of the NEMA.

The objectives of NEMWA involve the protection of health, wellbeing and the environment. The NEMWA provides measures for the minimisation of natural resource consumption, avoiding and minimising the generation of waste, reducing, recycling and recovering waste, and treating and safely disposing of waste.

No waste management activities are triggered by the EMPr amendments, hence no application in terms of the NEMWA was submitted to the Department of Mineral Resources.

## **4.10 EIA GUIDELINES**

A number of national and provincial EIA guidelines were published by different departments. These guidelines are mainly aimed at assisting relevant stakeholders by providing information and guidance and giving recommendations on a number of aspects relating to the environmental impact assessment process. The guidelines can be used by the competent authority, applicant and the EAP during the EIA process. It is therefore important that the EAP and the person compiling a specialist report must have relevant expertise when conducting the environmental impact assessments.

A number of guidelines were consulted during the compilation of this report and these include amongst them the following i.e. Guidelines on the Need and Desirability, Department of Environmental Affairs and Tourism Integrated Environmental Management Guidelines, Department of Water and Sanitation's Best Practice Guidelines and the Western Cape Provincial Department of Environmental Affairs and Development Planning Guidelines on Public Participation.

SECTION FIVE

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## **Details of the Public Participation Process**



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## 5. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED AND RESULTS THEREOF

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### 5.1 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED AND RESULTS THEREOF

Public participation is the cornerstone of any EIA process. The principles of the NEMA govern many aspects of EIA's, including public participation. The general objectives of integrated environmental management laid down in the NEMA include to "ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment". The National Environmental Management Principles include the principle that "The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary to achieve equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured", which basically means that the person responsible for the application (EAP) must ensure that provision of sufficient and transparent information on an on-going basis to stakeholders are made to allow them to comment, and to ensure that the participation of previously disadvantaged people like women and the youth are undertaken.

In terms of the EIA Regulations, 2014, when amending an environmental authorisation (Zibulo Colliery approved EMPr), the Environmental Assessment Practitioner managing the application must conduct at least a public participation process where all potential or registered interested and affected parties, including the competent authority, are given a period of at least 30 days to submit comments on the amended EMPr and where applicable the closure plan. In this case the amended EMPr is considered.

This section of the EMPr will give an explanation of the public participation process taken so far in order to comply with the above-mentioned requirements. A number of public participation guidelines were published in a bid to assist persons responsible for the environmental authorisation amendments. As much of the available guidelines were used in determining the public participation process, in guiding the public participation process of the proposed project.

Anglo American Inyosi Coal (Pty) Ltd is applying for an amendment of their environmental authorisation (Approved EMPr and EA) for the Zibulo Colliery – Underground Operations. The application for the amendment of the environmental authorisation/ EMPr is undertaken in terms of the process as laid out in part 2 of Chapter 5 under the NEMA EIA Regulations, 2014.

The above-mentioned regulations require that an applicant for an amendment of their environmental authorisation submit an amended EMP report to the competent authority after having subjected the reports to a public participation process.

In view of the above, a public participation process was initiated for the amendment of the environmental authorisation. The public participation process for the proposed project is designed to provide sufficient and accessible information to interested and affected parties (I&APs) in an objective manner to assist them to:

- raise issues of concern and make suggestions for enhanced benefits;
- contribute local knowledge and experience;

- verify that their issues have been captured;
- verify that their issues have been considered in the technical investigations; and
- comment on the findings of the EIA.

The following were conducted in undertaking of the public participation process for the proposed project.

#### **5.1.1 Notification of Potential Interested and Affected Parties**

The following methods of notification were used to notify the potential interested and affected parties of the opportunity to register and comment on the draft Amended EMPR during the public participation process for the proposed project:

- On the 14<sup>th</sup> of August 2020, notices inviting potential interested and affected parties to register and comment on the draft amended EMPr for the proposed changes, was fixed at two sites i.e. at the fence of the property where the proposed project will be undertaken. The notices were compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014.
- The draft amended EMPr report was submitted to all the commenting authorities for their comments.
- A copy of the draft amended EMPr report was placed at the Zibulo Colliery Underground offices for the public to peruse and make comments.
- On the 14<sup>th</sup> of August 2020, notices were posted within the Witbank News which is distributed in and around Ogies, informing the public that the draft amended EMPr report is available for comments at the Zibulo Colliery Underground offices. The notices were compiled in compliance with the requirements of Regulation 41(3) of the EIA Regulations, 2014.

#### **5.1.2 Registered Interested and Affected Parties**

The following are currently registered as interested and affected parties for Zibulo Colliery:

- Department of Mineral Resources and Energy, Mpumalanga Regional Office (Competent Authority),
- Department of Water and Sanitation, Mpumalanga Regional Office (Commenting Authority),
- Department of Agriculture, Rural Development, Land and Environmental Affairs, Mpumalanga Provincial Office (Commenting Authority),
- SANRAL,
- Mpumalanga Tourism and Parks Agency (Commenting Authority),
- South African Heritage Resources Agency (Commenting Authority),
- National Department of Agriculture, Forestry and Fisheries, Mpumalanga Regional Office (Commenting Authority),
- Mpumalanga Tourism and Parks Agency (Commenting Authority),
- Victor Khanye and eMalahleni Local Municipalities,
- Nkangala District Municipality,

- Councillors of Ward No. 30 (eMalahleni Local Municipality) and Wards No. 7 and 9 (Victor Khanye Local Municipality), and
- Zibulo Colliery, immediately surrounding land owners and lawful occupiers.

### **5.1.3 Proof of Consultation**

Proof of the above-mentioned consultation and results thereof is attached to this EMPr amendment report. Refer to Appendix 3 for the notice sent to the I&AP's.

### **5.1.4 Comments, Issues and Responses on the EMPr Amendment Report**

All comments and issues received were recorded and responses to the comments made. The comments and issues raised by the interested and affected parties, their responses and reaction to the response have been presented in the final Amended EMPr by the DMRE EMPr template.

SECTION SIX

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## **Baseline Environmental Assessment**

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## 6. BASELINE ENVIRONMENTAL ASSESSMENT

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### 6.1 GEOLOGY

The Zondagsfontein coal reserve falls within the Witbank Coalfield, comprising sediments of the Karoo Sequence that were deposited on an igneous pre-Karoo floor. The basement consisted mainly of rhyolitic rocks of the Damwal Formation, Rooiberg Group, with andesite from the Hekpoort Formation, Pretoria Group in the west, and Granophyre of the Lebowa Granite Suite present in the North.

All the coal seams from the no. 1 (at the bottom) to the no. 5 coal seam (at the top) are developed in the Zondagsfontein coal reserve area, with the no. 3 coal seam and the no. 1 coal seam sporadically developed. The no. 5 coal seam is present over the largest part of the study area, but much thinner than the more extensive no. 2 and no. 4 coal seams. The overall lithological profile, up to, and including the deepest coal seam, comprises:

- Soft overburden;
- Hard overburden;
- No. 5, 4, 3, 2, 1 coal seams;
- Interburden between the coal seams (Oryx, 2008).

### 6.2 CLIMATE

The study area falls in the summer rainfall region of the Highveld, or Eco-region 2 as defined by the 1999 State of the Environment Report produced by the Department of Environmental Affairs and Tourism. The rainy season in this area occurs between October and April. Peak rainfall occurs in December and January. The dry period occurs between May and September, with the lowest rainfall occurring in July. Evaporation exceeds precipitation in most cases. The average pan evaporation at Bethal is nearly 2.5 times the annual rainfall. The average number of days with measurable precipitation is 90 days.

The study area has a temperate climate, with warm summers and cold, frosty winters. The mean daily maximum temperature is 25.8°C in January (mid-summer) and 17.1°C in July (mid-winter). The average daily minimum temperature is 13.2°C in January and 0.2°C in July.

The daytime airflow is dominated by northerly winds (12% of the time) and easterly to east-south-easterly winds (between 8% and 9% of the time) with a 7% frequency of westerly to north-westerly winds. During the night-time there is a decrease in the northerly to westerly winds with a strong increase of winds from the east and east-southeast.

Severe frost can occur at times with the average first and last days of frost being 21 May and 1 September, respectively. The average duration of the frost period is 103 days. Extreme first and last dates of recorded frost over a period of 30 years are 15 April and 18 October respectively. These storms are most prevalent in early summer. In an average year, there are 37 thunderstorms and 3 hail events in the area (Oryx, 2008).

### 6.3 TOPOGRAPHY

The site comprises an undulating landscape of disturbed grassland and commercial agricultural lands, grazing lands and homesteads. The landscape changes from moderately undulating plains and pans in the north to slightly irregular undulating plains and hills in the south.

From west to east on the proposed mining area, the topography in the west is at a height of 1600 mamsl on the farm Straffontein 252 IR and rises up to 1620 mamsl in the east on the farm Zondagsfontein 253 IR. A tributary of the Wilge River flows where the topography slopes to 1580 mamsl on the farm Zondagsfontein 253 IR.

From north to south, the topography rises from 1580 mamsl to 1645 mamsl. The topography is traversed by numerous non-perennial tributaries of the Wilge River, and crossed by farm roads and the secondary road to Strehla (Oryx, 2008).

### 6.4 SOILS, LAND CAPABILITY AND LAND USE

A total of seventeen (17) soil forms were identified in the study area. These include: Hutton (Hu), Clovelly Cv, Griffin (Gf), Shortlands (Sd), Valsrivier (Va), Pinedene (Pn), Avalon (Av), Bainsvlei (Bv), Glencoe (Gc), Dresden (Dr), Sepane (Se), Westleigh (We), Katspruit (Ka), Bonheim (Bo), Willowbrook (Wo), Glenrosa (Gs) and Mispah (Ms). The distribution of the soil types is closely linked to the topography and the location of parent materials. In drainage line profiles, the dominant soils are distributed as follows:

- Within the drainage lines and wetlands- Katspruit, Westleigh, Bainsvlei, Kroonstad, Bonheim and Sepane. Willowbrook soils occur along drainage lines in the southern section only;
- Lower midslope- Glencoe, Dresden, Pinedene, Avalon, Westleigh and Bainsvlei (transition zone of moist grasslands);
- Upper midslope- Clovelly, Griffin, Hutton, Valsrivier and Shortlands.

There are isolated patches of Glenrosa, Mispah and Dresden soils at the low points in the topography, where the clay was deposited.

Of the total area investigated (8642.26ha), approximately 57.70% is considered to be of arable land potential, 9.41% is grazing land, 13.37% as conservation or wilderness land, and 15.48% classifies as wetland.

Land use is predominately cultivation, including maize cropping and grazing. The Leeuwfontein opencast coal mine and the Khutala Colliery are situated to the north of the study area. There are a number of human settlements within and adjacent to the study area. These settlements are largely scattered farmsteads and farm worker houses (Oryx, 2008).

### 6.5 FLORA AND FAUNA

The study area is located within the grassland biome of South Africa. The grassland biome is one of the most threatened biomes in South Africa, due to agricultural and mining activities. The study area is located within the Moist Sandy Highveld Grassland vegetation unit (15 547 km<sup>2</sup> total area; ± 55% transformed; 0.67% conserved). The geophyte *Hypoxis hemerocallidea* (Star Flower) is the flagship

species of the grassland biome. This species is under pressure as a medicinal plant and its status needs to be revised every five years. This grassland is dominated by Fan Lovegrass *Eragrostis plana*, Weeping Lovegrass *E. curvula*, Speargrass *Heteropogon contortus*, *Trachypogon spicatus* and *Themeda triandra*. Dicotyledonous forbs are not abundant, though many species occur in the area. The strong presence of the grass *Eragrostis plana* confirms that the vegetation within the study area belongs to the Moist Sandy Highveld Grassland.

Current human influence overrides the influence of environmental factors on the vegetation, with soil moisture content influencing human decisions, land use practices and livestock movements. According to the Vegetation Report, there are three vegetation communities that occur in the area. These are:

- *Hyparrhenia hirta* - *Eragrostis plana* Utilised Grassland Community on sandy clay loam soils. This community has two variations:
- *Sporobolus africanus* - *Hyparrhenia hirta* - *Eragrostis plana* Utilised Grassland Variation on sandy clay loam soils;
- *Eragrostis curvula* - *Hyparrhenia hirta* - *Eragrostis plana* Over Utilised Grassland Variation on sandy clay loam soils.
- *Cirsium vulgare* - *Eragrostis plana* Over Utilised Grassland Community on sandy clay soils;
- *Agrostis eriantha* - *Paspalum urvillei* Moist Disturbed Grassland Community on sandy soils.

The Black Rumped Button Quail and the Wattled Crane are endangered. Species observed on site that do not have conservation status include Marsh Owls (*Asio capensis*), the Cape Spotted Owl, Kites and numerous waterfowl (Francolins Yellow-Billed Ducks and Guinea Fowl). The presence of owls suggests that rodents occur in this area. Most of the mammals in this habitat require sandy soils, dense cover and rocky areas for shelter. As the area is currently predominately transformed, and under agriculture, there has been a reduction in habitat and prey availability. Small mammals such as the Yellow Mongoose, Black Backed Jackals, the Common Duiker and rodents naturally occur in the area and were observed during site visits. Six species of amphibian are likely to occur in the wetlands. Reptiles likely to be associated with the wetlands include the Common Brown Water Snake (*Lycodonomorphos rufulus*) and the Egyptian Cobra (*Naja haje*) (Oryx, 2008).

## 6.6 SURFACE WATER

Zondagsfontein mining area is situated within two catchment areas, the Witbank Dam and Wilge River catchments. These two catchments make up part of the Loskop Dam catchment, and within quaternary sub-catchments B11E, B11F and B20E of the Limpopo-Olifants primary drainage region. The proposed mining area is located approximately 40km south west of Witbank. The Zondagsfontein mining area includes portions of the farms Strehla 261IR, Straffontein 252IR, Zondagsfontein 253IR, Leeuwfontein 219IR, Rietvlei 64IS, Onverwacht 66IS, Uitvlugt 255IR, Olga 35IS, Smithfield 44IS, Cologne 34IS, Springfield 44IS and Klippoortie 32IS. The proposed mining area is located on three quaternary sub-catchments. The western side of drains into Wilge River and its tributaries, the eastern side drains into the Klippoortjiespruit and Rietspruit and their tributaries, which in turn drain into the Saaiwaterspruit. From the above-mentioned catchments, the river flows to Loskop dam and through the central part of the Kruger National Park to Mozambique. It joins the Limpopo River and discharges to the Indian Ocean on the east African coastline. Various catchments

and sub-catchments were identified for the Zondagsfontein mining area. The delineation of the catchments was made based on the proposed mining boundary.

In terms of the catchment description, the receiving water body is an important concept. The receiving water body is the point below which the mine's impact on the catchment is considered to be negligible. This implies that aspects such as surface water users need only be defined down to the receiving water body. The receiving water body for the assessment of potential surface water quality impacts of the mine is taken as the Loskop Dam. In terms of impact assessment, the total area proposed to be mined is small compared to the Loskop Dam catchment. The proposed mining area is some 87km<sup>2</sup>, compared to a catchment of 12 285 km<sup>2</sup> for Loskop Dam (or some 0.7% of the area). The MAR for Loskop Dam is some 384 x 10<sup>6</sup> m<sup>3</sup>, while the MAR for the mine area is estimated at 4.63 x 10<sup>6</sup> m<sup>3</sup> (Oryx, 2008).

## 6.7 GROUNDWATER

The depth to water table ranges in external users' boreholes from 0m to 30.8m with an average depth of 8.16m. In the shallow monitoring boreholes depth to water table varies from 1.60m to 13.16m with an average of 6.33m. In the deeper monitoring boreholes, the range is from 1.66m to 103.4m, giving an average of 34.44m. There is notably lower groundwater level in boreholes GWE-16, GWE-25 and GWE-35. These water levels are due to current abstraction activities and not mining, as the closest distance of mining from boreholes GWE-16 and GWE-25 is about 430m. The average observed depth to water table for the shallow weathered zone aquifer excluding outliers is 5.95m below the collar. Borehole yields are based on the borehole yield information obtained during drilling of the geohydrological boreholes, as well as from information generated during the borehole and spring survey, for the area. In the shallow weathered zone aquifer, a total of 18 water strikes were recorded in 14 out of the 20 newly drilled boreholes. These strikes ranged in depth from 8.5m to 29m. Their estimated blow yields ranged from 0.01 l/s to 5 l/s, with an average rate of 0.71 l/s. The remaining boreholes drilled into Karoo sedimentary units, and not into structures or dykes, yielded 8 water strikes ranging from 0.01 l/s to 3 l/s averaging at 0.47 l/s. In the deep fractured aquifer zone, a total of six water strikes were recorded in five of the ten newly drilled geohydrological boreholes. These strikes ranged in depths between 27m and 64m. Their estimated blow yields ranged between 0.02 l/s and 7 l/s, averaging at 1.32 l/s. Seven of the boreholes that were drilled into the graben structure gave a total of 11 water strikes ranging from 0.02 to 5 l/s, averaging at 1.22 l/s. Three water strikes recorded in dolerite intersections in two boreholes, gave blow yields of 0.01 and 0.2 l/s, averaging at 0.11 l/s.

The main mechanism for potential contaminant migration is convection, whilst the main aquifer zone through which contaminant migration and interaction with surface water resources will occur is the shallow weathered zone Karoo aquifer. It is for these reasons that ground water flow through the shallow weathered zone aquifer needs to be assessed. The direction and velocity of groundwater flow are governed by the ground water level elevation distribution. In general, it is safe to assume that the groundwater level elevation distribution within the shallow weathered zone aquifer will follow the surface topography. Subject to the above it can therefore be stated that groundwater flow directions in areas not impacted by mining will be perpendicular to the surface topography contour lines - along the surface topographical gradient - from high ground towards the spruits and rivers. Groundwater flow directions will vary dynamically subject to changes in the groundwater level elevation distribution, which varies as a function of aquifer saturation. Any groundwater flow direction map compiled



therefore represents a snapshot in time. Regionally, ground water flow directions in aquifers not impacted by future Zondagsfontein mining related activities will be along the surface topographical gradient, from high ground towards spruits, streams and rivers. Assuming an average surface gradient of not more than 2.5%, relating to an average ground water gradient of not more than 1.7%, and subject to the estimated values for hydraulic conductivity and effective porosity as discussed in preceding sections, the natural ground water seepage velocity in the shallow weathered zone aquifers at Zondagsfontein is estimated at 0.017 m/day, or 6 m/year.

It is widely accepted that recharge to un-impacted Karoo type aquifers is in the order of 1% to 3% of the average annual precipitation. In order to investigate the recharge potential of the groundwater regime at the Zondagsfontein study area in detail, the following information was evaluated: geology, the presence of dolerite dykes and sills, surface topography, geohydrological data, the physical properties of the shallow weathered and deep Karoo aquifer systems, the presence of floodplains and wetland areas, rocky outcrop areas, alluvial beds and active and non-active river systems. A mean annual precipitation (MAP) of 750 mm/a was used in recharge calculations. Based on the shallow groundwater levels, rivers and streams are not seen as potential recharge areas but rather potential discharge areas. On the other hand, pans may serve as either, or both, potential recharge or discharge areas. Taking all of the above into account, the following values for recharge were calculated:

- Groundwater recharge in un-impacted mining environments of between 1.5% and 3.0%. This calculates to between 11.25 mm/year and 22.5 mm/year, respectively. The range in the recharge is a function of the type of overburden present. For instance, rocky outcrop areas and alluvial material have higher recharge potential than vegetated lands, etc.
- Dolerite dykes and sills: Intrusion specific. Can either act as a preferential flow zone or as a geohydrological barrier.
- Bord and pillar panels: 1% - 2.5% of annual rainfall (Oryx, 2008).

## 6.8 AIR QUALITY

Ambient air quality data is restricted to three months of smoke (particulates) and sulphur dioxide data collected at the Kriel water works during 1996. This monitoring station was established as part of the National Smoke and Sulphur Dioxide Monitoring Network in October 1996, but due to personnel shortages measurements was discontinued after 3 months. Measurements were conducted over a 3-daily averaging period. The maximum 3-daily average smoke concentrations were found to be well within the DEAT guideline for maximum daily smoke levels of 250  $\mu\text{g}/\text{m}^3$ . The sulphur dioxide levels, however, constituted 40% to 85% of the DEAT guideline for maximum daily  $\text{SO}_2$  concentrations, given as 262  $\mu\text{g}/\text{m}^3$ . The air pollution data presented above is not adequate to characterise baseline ambient air quality. The data do, however, does indicate that local development has already resulted in elevated pollutant concentrations. Recently a number of opencast operations have started in the vicinity of the study area. These include the Block I and A minipits of the Khutala mine and the Goedgevonden Colliery of Xstrata on the farm Goedgevonden. All these operations area truck and shovel and are located to the north of the study area (Oryx, 2008).

## 6.9 VIBRATION AND NOISE

The general character of the area is rural, despite the numerous coal mining related activities. There are several farmsteads and large areas of farmland, either cultivated with crops or for grazing purposes. These farmlands provide in essence acoustically 'soft' conditions, i.e. they will increase the attenuation of sound energy due to the enhanced sound absorption characteristics of the ground. This is especially true in summer, when maize and grass are dense and tall. The topography of the area ranges from a gently undulating landscape in the north to more articulated hills and valleys in the south. These hills do not have steep slopes and will not provide significant screening against the propagation of noise from the sources to receivers. However, these characteristics do mean that noise will propagate at acute angles to the ground, thereby augmenting the attenuation caused by the ground effect. At present the major sources of noise in the environment of the proposed shaft and conveyor are the following:

- The R555: This road runs along the railway line from Delmas via Ogies to Witbank. This provincial road also carries a large amount of traffic, including many heavy vehicles. At present this route still crosses through the centre Ogies, but a bypass immediately north of the town is planned. For the purposes of this study it was assumed that this bypass would already have been constructed by the time that the Beesting mining operation starts.
- The R545: This provincial road runs north south and crosses the R555 at Ogies. It connects the N4, the settlement Phola and the N12 to Ogies, and the further south lying coal mining, other commercial and industrial centres, e.g. Kriel, Bethal and Secunda. As the R555 it also carries a large number of heavy vehicles.
- Non-provincial roads: The area is crossed by several non-provincial roads that are used by a significant number of light and heavy vehicles, mostly related to the coal mining operations.
- Railway: Ogies is a railway traffic control centre for the busy main line from the Rand to the east of the country, as well as the coal export line to Richards Bay.
- Existing mining operations: There are at present several mining operations in the larger area south and immediately north of the R555. These are the Khutala and Klipspruit opencast mines and processing plants and the Block A open cast mine.
- Mining related infrastructure: There are several ventilation system exhausts located in the environment of the new development, which significantly contribute to the present ambient noise levels.

The future pre-development ambient noise levels were estimated by calculating the combined noise levels caused by road traffic and the existing mining operations and equipment. For this purpose, a road traffic noise prediction model of the roads was developed, in accordance with the procedures specified in SANS 10210 (Oryx, 2008).

## 6.10 ARCHAEOLOGICAL AND CULTURAL HISTORY

No sites, structures or objects relating to the Stone Age and Iron Age were found. A few cemeteries and graves were identified (Oryx, 2008).

## 6.11 SENSITIVE LANDSCAPES

Sensitive landscape features are defined in terms of NEMA principles (1997): “*Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands*”. In terms of this definition, the sensitive areas for the Zondagsfontein study are the wetland areas (Oryx, 2008).

The updated underground infrastructure area wetland assessment is attached as Appendix 1.

## 6.12 VISUAL ASPECTS

Overall, the study area is rural with pleasant vistas of undulating farmland. The main public route through the area is the provincial road from Ogies to Leandra. The views from this road are primarily of farmland with a few significant visual intrusions such as the overburden stockpiles of the Goedgevonden mine and Khutala South Shaft adjacent to the road and the Kendal powerstation further away to the west (Oryx, 2008).

## 6.13 REGIONAL SOCIO-ECONOMIC STRUCTURE

In the mid-1990s Mpumalanga Province had one of the fastest growing economies in South Africa. Although it is one of the less populated provinces, Mpumalanga has the fourth largest economy, based largely on the rich natural resources of the area. However, as with the rest of the SA economy, this growth rate has slowed down considerably in the late 1990s. In the 4 years to 2005 the province showed economic growth of 3.2% per annum well below their target of 6%. The population of 2.6 million in 1996 has grown to just over 3 million in 2001, this figure being around 7% of the South African population. Severe levels of poverty are evident, a result of the geographic characteristics and racial inequalities of the province. The main industrial and manufacturing activities in Mpumalanga include, iron, steel, stainless steel, petrochemicals and chemical products, agricultural products, mining, power generation, timber and wood products and food processing. The potential for further development in these sectors, as well as tourism is considerable. The favourable location of the province enhances its development potential. The Maputo harbour is less than 100km from the Mozambique border, and there is close proximity to the substantial Gauteng market and the good rail and road infrastructure allowing access to ports at Durban and Richards Bay.

The coal deposit in the Zondagsfontein Project is located in the Nkangala District Municipality (although it is very close to the border with the Gert Sibande Magisterial District and as such both areas has been covered by this report). The route of the conveyor runs through this District and the towns of Ogies and Phola are located within this district. These areas likely to be of interest in terms of the recruitment for the mine, as well as because they are the areas closest to where the coal is likely to be washed and transported.

The Gert Sibande Magisterial District is very close to the Zondagsfontein study area. The towns of Lebohang and Leandra are also situated within the Gert Sibande Magisterial District and these are the areas of economic interest to the project. It should be noted that both the name of this Magisterial District and some of the Municipalities within it have changed in recent years.

The towns of Ogies and Leandra are the closest towns to the proposed development and are likely to be impacted both positively and negatively by the mine development. Phola, a large squatter settlement close to Ogies in the 1996 census Ogies and Phola were combined into one area with

Kendal, in the 2001 census they were all counted individually. For this reason, no comparative statistics will be shown because the geographically the areas are not comparable without a high level of manipulation. Other than its geographical closeness to the mine what makes the Ogies/ Phola area of particular relevance is that it is the area closest to the end point of the conveyor route and the washing plant.

Leandra is the second of the towns that will be most affected by the proposed development. It is situated 21km south of the proposed site in the Gert Sibande District Municipality. Traditionally a small farming services town en-route from Sasol-Secunda to Johannesburg. In the early 1990s informal settlement establishment began on land to the South of the town and has grown at a steady rate ever since. In the latter part of the 1990 a programme of basic service provision to the informal settlement was initiated. In 1996 this town was counted as part of Leandra however in 2001 it was counted on its own and called Lebohang. Statistics for Lebohang are counted with those of Eendrag which is considered an extension of it. The actual town of Leandra is in fact very small with a total population of less than 100, it is a service centre, as it is so small one set of stats will be considered named Lebohang/ Leandra which covers all the areas mentioned above (Oryx, 2008).

SECTION SEVEN

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## **Environmental Impact Assessment**

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## 7. ENVIRONMENTAL IMPACT ASSESSMENT

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### 7.1 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOLLOWED

#### 7.1.1 Approach to Environmental Impact Assessment

The term 'environment' is used in the broadest sense in an Environmental Impact Assessment (EIA). It covers the physical, biological, social, economic, cultural, historical, institutional and political environments.

An EIA is a good planning tool. It identifies the environmental consequences of a proposed project from the beginning and helps to ensure that the project, over its life cycle, will be environmentally acceptable and integrated into the surrounding environment in a sustainable way. The following amendments has been assessed in the EIA:

- The impacts upon the wetland system that was not included in the original EMPr. This has been added for all of the phases.
- The conveyor stream crossing has been aligned with the conditions within the IWUL and new impacts during the operational and decommissioning phases has been considered.
- Waste management activities have been assessed as it was never done for the original EMPr. This has been done for the operational and post-closure phases. The rock dump has been added to this.
- Barrier pillar thickness is different than the original EMPr. Anglo barrier pillar standards are used when determining the thickness of barrier pillars. This change in thickness has been assessed and the impact assessment has been updated.
- An EIA has been conducted for the construction and operation of a new 28 000 L bulk diesel storage tank. This was not part of the original EIA/ EMPr and have now been added. The construction and operation of this new bulk diesel storage tank does not trigger new listed activities and thus it can be incorporated into this EMPr amendment. Table 2-1 provides a description of the bulk diesel storage tank whereas Table 8-1 shows the new commitments.

#### 7.1.2 Environmental Impact Assessment Process Followed

Under Section 24 of the National Environmental Management Act (NEMA), the Minister promulgated the regulations pertaining to environmental impact assessments (EIA Regulations, 2014) under Government Notice R326 in Government Gazette 38282 of 4 December 2014. These EIA regulations repealed the 2010 EIA regulations and therefore any process relating to environmental authorisations must be undertaken under the EIA Regulations, 2014. Chapter 4 of the EIA Regulations, 2014 deals with the provisions for application for environmental authorisation.

In view of the above, Anglo American Inyosi Coal (Pty) Limited's Zibulo Colliery – Underground Operation is obliged to comply with provisions of Chapter 4 for the intended environmental authorisation amendment application for the repositioning of mine infrastructures. Part 2 of chapter 5 under regulation 31 of the EIA Regulations, 2014, contemplate the process to be undertaken for the application for the amendment of the environmental authorisation for the proposed changes (South

Africa, Environmental Impact Assessment Regulations, 2014). The process to be followed is described below.

#### **7.1.2.1 Pre-application Consultation with the Competent Authority**

In terms of section 24D (1) of the National Environmental Management Act, 1998 (Act 107 of 1998), the Minister responsible for mineral resources is the competent authority for environmental matters relating to mining and associated activities. In view of the above, the application for the amendment of the environmental authorisation for the proposed changes is submitted to the Department of Mineral Resources and Energy (DMRE), eMalahleni Regional Office for their consideration and decision making.

#### **7.1.2.2 Information Gathering**

Environmental baseline data has been obtained, pertaining to surface water, geohydrological data, topographical analyses, soil surveys, vegetation surveys, wetland surveys, social aspects, air quality surveys, noise impact assessment and geological conditions. Weather data was acquired from the South African Weather Service. Historic land use was determined through available data and by visual observations made during various field studies. The data accumulated and analysed is sufficient to gain a baseline indication of the present state of the environment. The use of this baseline study for impact assessments is thus justified and reliable conclusions could be made.

## **7.2 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY**

The environment impact/ risk assessment addresses the actions of the amendments of the Anglo American Inyosi Coal (Pty) Ltd's Zibulo Colliery: Underground Operation and assesses the significance of the impact/ risk on the environment. The impacts and risks will then be described using the parameters specified in the tables below. The impact/ risk on the environment and human health has been determined based on the rated level of significance of the environmental impact/ risk. See Table 7-1 for the criteria used to assess the impacts.

**Table 7-1: Criteria used for the environmental impact/ risk assessment**

<b>The Status of the Impact</b>		
Positive:	A benefit to the holistic environment.	
Negative:	A cost to the holistic environment.	
Neutral:	No cost or benefit.	
<b>The Probability of the Impact</b>		
<b>Score</b>	<b>Severe/ beneficial effect</b>	<b>Description</b>
0	None	The impact will not occur.
1	Improbable	Less than 15% sure of an impact occurring.
2	Low (probability)	Between 15% and 40% sure of an impact occurring.
3	Medium (probability)	Between 40% and 60% sure that the impact will occur.
4	Highly Probable	Between 60% and 85% sure that the impact will occur.
5	Definite	Over 80% sure that the impact will occur.
<b>The Duration of the Impact</b>		
<b>Score</b>	<b>Severe/ beneficial effect</b>	<b>Description</b>
1	Short term	Less than 2 years.
2	Short to medium term	2-5 years.
3	Medium term	6-25 years.
4	Long term	26-45 years.
5	Permanent	46 years or more.
<b>The Scale of the Impact</b>		
<b>Score</b>	<b>Severe/ beneficial effect</b>	<b>Description</b>
0	None	-
1	Site	Within the site boundary.
2	Local	Affects immediate surrounding areas.
3	Regional	Extends substantially beyond the site boundary but only affects the region or province.
4	National	Affects country.
5	International	Affects is beyond the country and possibly the world.
<b>The Magnitude of the Impact</b>		
<b>Score</b>	<b>Severe/ beneficial effect</b>	<b>Description</b>
2	Minor	Effects observable – environmental impacts reversible with time without human intervention.
4	Low	Effects observable – impacts reversible with rehabilitation.
6	Moderate	Effects observable – affected area restored to acceptable environmental state.
8	High	Extensive effects – irreversible alteration to the environment.
10	Very high/ Don't know	Extensive permanent effects with irreversible alteration.



### 7.2.1 Significance of Possible Impacts

The significance of the impacts is calculated by multiplying the consequence of the impact by the probability of the impact. Table 7-2 below illustrates the methodology used to calculate the significance of the impact for the proposed project. The significance of the impact is used to categorise the risk to the environment and human health.

**Table 7-2: Significance Rating and Risk Category Rating**

The Consequences of the Impact		
Consequence = Magnitude + Duration + Scale		
The Significance of the Impact		
Significance = Consequence x Probability		
Significance	Score out of 100	Risk Category
Low	1 to 30	
Medium	31 to 60	
High	61+	

### 7.2.2 Risk to the Environment

Table 7-3 on the following page lists the possible impacts that the amendments of the Zibulo Colliery: Underground Operation may have on the direct and surrounding environment. The methodology specified above was used to identify and assess the impacts and then rate the significance of the impact and hence determine the risk of the impact on the environment during the operation and decommissioning of the mine. Mitigation measures have been specified for each impact and must be implemented in order to minimise the risk of the impact.

### 7.3 RESULTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

#### 7.3.1 Assessment of Zibulo Colliery's EMPr Amendments Impacts/ Risks

Table 7-3: EMPr Amendments Environmental Impact Assessment

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/ N)	Management and Mitigation Measures
Construction of the underground infrastructure (access shaft, ventilation shaft, roads, workshops, offices, PCD's, water management infrastructure, sewage treatment plant and storage facilities) within the regulated areas of multiple wetlands. Some of these infrastructures has been built within wetlands.	Wetlands/ Sensitive Landscapes	Removal of soils, vegetation and a loss of habitat during the construction of these infrastructures. Arrival of invasive species where areas have been left bare due to construction.	N	3	2	2	6	30	Y	<p>Construction to be conducted during the dry season to decrease the impact on the wetlands (Wetland Consulting Services, 2005).</p> <p>Construction activities must not take place within the 1:100 year flood-line or within a horizontal distance of 100m from any watercourse, estuary, borehole or well, whichever is the greatest, unless authorised within the IWUL.</p> <p>The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures.</p> <p>The Licensee must ensure that structures such as the river diversions, river road crossings, weirs and the culverts must withstand the 1:100 year flood line.</p> <p>The structure of temporary crossings must be non-erosive, structurally stable and must not induce any flooding or safety hazard. Temporary crossings must be inspected monthly for accumulation of debris, blockage, erosion of abutments and overflow areas. Debris must be removed and damages must be repaired and reinforced immediately.</p>
		Loss of surface- and subsurface water flow to the various wetlands.	N	3	2	2	6	30	Y	<p>Construction activities shall start up-stream and proceed into a down-stream direction, so that the recovery processes can start immediately, without further disturbance from upstream construction works.</p> <p>The natural migration of aquatic biota and upstream movement of fish must not be disturbed.</p> <p>The development may not impede natural drainage lines.</p> <p>The construction camp shall not be located within the 1:100 year flood line or within a 100m of any watercourse, whatever is the greatest.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100 meters from any watercourse or estuary. Oils and other potential pollutants must be disposed of at an appropriate licensed site.</p> <p>The system shall be maintained in a state of good repair and standby pumps must be provided.</p>

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/N)	Management and Mitigation Measures
		Increase in pollutants (hydrocarbons, dust generation and domestic waste) to the wetlands during the construction period.	N	3	2	2	6	30	Y	<p>Pollutions caused by spills from the conveyances must be prevented through proper maintenance and effective protective measures especially near all stream crossings.</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.</p> <p>Alien vegetation must not be allowed- to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.</p> <p>Soils that have become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.</p> <p>The extent of disturbance should be limited by limiting all construction activities to the servitude as far as practically possible.</p> <p>No materials should be stockpiled within the wetland areas along the route and driving within the wetland areas should be kept to an absolute minimum.</p>
		Compaction of soils around the wetland areas.	N	3	2	2	6	30	Y	<p>Poaching and the removal of wetland plants are to be prohibited. Employees/ contractors can be informed during the various safety meetings.</p> <p>As far as possible, the existing road and farm tracks should be used as the service road for the conveyor and to provide access during construction as this will reduce the extent of the disturbed area.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>Monitor will be conducted on a monthly basis at water resources at the surface water monitoring points and groundwater monitoring points to determine the impact of the construction and other activities on the water quality by taking samples at the monitoring points as per the WUL.</p> <p>All conditions within the approved IWUL (if not mentioned in this EMPr amendment report) must be adhered to.</p>

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/N)	Management and Mitigation Measures
Construction of the overland conveyor belt through various wetland systems.	Wetlands/ Sensitive Landscapes	Removal of soils, vegetation and a loss of habitat during the construction of these infrastructures. Arrival of invasive species where areas have been left bare due to construction.	N	3	2	3	6	33	Y	<p>The conveyor belt should be constructed in such a way that sufficient space remains underneath the conveyor belt to allow for free movement of fauna species such as small mammals and herpetofauna. A suitably qualified specialist should be consulted in this regard.</p> <p>No construction activity may take place within the 1:100 year flood line or the delineated riparian habitat, whichever is the greatest, or within a 500m radius from the boundary of any wetland unless authorised by the IWUL.</p> <p>No site activities may occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance.</p> <p>The conveyor should span the entire width of the valley bottom crossing. Conveyor footings within the wetlands should be kept minimal. The conveyor must be constructed on piles and gantries preferable during the dry season (Wetland Consulting Services, 2005).</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse(s).</p> <p>The necessary erosion prevention measures must be employed to ensure the sustainability of all structures.</p>
		Loss of surface- and subsurface water flow to the various wetlands.	N	3	2	3	6	33	Y	<p>The height, width and length of structures must be limited to the minimum dimension necessary to accomplish the intended function.</p> <p>Structures must not be damaged by floods exceeding the magnitude of floods occurring on average once in every 100 years.</p> <p>Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.</p> <p>Structures must be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas – debris must be removed and damages must be repaired and reinforced immediately.</p> <p>The construction camp must be located outside the extent of the watercourse(s) and must be recovered and removed one (1) month after construction has been completed.</p> <p>During construction erosion berms shall be installed to prevent gully formation, according to the slope.</p>
		Increase in pollutants (hydrocarbons, dust generation and domestic waste) to the wetlands during the construction period.	N	3	2	3	6	33	Y	<p>All areas affected by construction shall be rehabilitated upon completion of the construction phase of the development. Areas shall be reseeded with indigenous vegetation species as required, and the use of seed nets is recommended to prevent erosion.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or delineated riparian habitat, whichever is the greatest. Oils and other potential pollutants must be disposed of at an appropriate licensed site.</p> <p>During construction phase no vehicles shall be allowed to indiscriminately drive through any wetland areas.</p> <p>Poaching and the removal of wetland plants are to be prohibited. Employees/ contractors can be informed during the various safety meetings.</p> <p>Alien and invader vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or</p>

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		Compaction of soils around the wetland areas.	N	3	2	3	6	33	Y	<p>controlled.</p> <p>As far as possible, the existing road and farm tracks should be used as the service road for the conveyor and to provide access during construction as this will reduce the extent of the disturbed area.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>Monitor will be conducted on a monthly basis at water resources at the surface water monitoring points and groundwater monitoring points to determine the impact of the construction and other activities on the water quality by taking samples at the monitoring points as per the WUL.</p> <p>All conditions within the approved IWUL (if not mentioned in this EMPr amendment report) must be adhered to.</p>
Site preparation, construction and installation of the new 28 000 L bulk diesel storage tank. This includes the drilling of the two cased boreholes that will pump diesel and oil, respectively, to the underground operations.	Soil	Loss of topsoil through wind and water erosion as well as soil compaction through the movement of machines.	N	3	1	2	4	21	Y	<p>Site preparation, construction and installation must be conducted, as far as possible, during the dry season.</p> <p>The construction area must be kept as small as practically possible.</p> <p>All construction and drilling vehicles must be in a good working condition and maintenance must be conducted off-site. Emergency repairs must be conducted over drip trays and other soil coverings to prevent hydrocarbons from entering the environment.</p> <p>Hydrocarbon spill kits will be provided at the construction site.</p> <p>Dust suppression can be conducted to prevent unnecessary dust generation during the construction phase.</p> <p>All employees/ contractors must adhere to the Zibulo Colliery waste management procedures. Waste bins/ skips will be provided at the construction site.</p> <p>The area around the bulk diesel storage tank (within the fenced area) can be vegetated to prevent unnecessary soil loss and dust generation.</p>
		Hydrocarbon spills from construction and drilling vehicles can contaminate the soils.	N	3	1	2	4	21	Y	
	Surface- and Groundwater	Surface- and groundwater can be contaminated through increase sediment entering surface- and groundwater resources.	N	3	1	2	4	21	Y	
		Hydrocarbon spills from construction and drilling vehicles can contaminated surface- and groundwater resources.	N	3	1	2	4	21	Y	
	Visual	The bulk storage tank will affect the aesthetics of the surrounding area.	N	3	1	2	4	21	Y	
	Air quality	Construction and drilling vehicles will generate dust during construction and drilling. This will affect the surrounding air quality.	N	3	1	2	4	21	Y	
	Wetland/ Sensitive landscapes	Sediment (including dust fallout) and hydrocarbons from construction and drilling activities can enter the surrounding wetland/ sensitive landscapes.	N	3	1	2	4	21	Y	
	Waste generation	General and hazardous waste will be generated during the construction and drilling activities.	N	3	1	2	4	21	Y	

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/	Probability	Duration	Scale	Magnitude	Significance/	Mitigation	Management and Mitigation Measures
			Negative (N)/ Neutral Impact				Risk	Required (Y/N)		
Contractors camp site preparation, construction site preparation, drilling and construction of the ventilation shaft (Vent fan no. 4) and associated infrastructure.	Soil quality	The contamination and compaction of soils around the construction site.	N	3	2	2	4	28	Y	<p>Servicing of equipment to be undertaken prior to camp site establishment.</p> <p>Clean all spillages as highlighted in the Emergency Preparedness Plan.</p> <p>Rip all compacted areas.</p> <p>The topsoil stockpile must be fenced and hydroseeded to prevent soil loss.</p> <p>Any terraces present must be hydroseeded to avoid erosion.</p>
	Surface water	Increased in silt load in runoff and erosion.	N	3	2	2	4	28	Y	<p>Construct and implement stormwater management measures and infrastructure around the affected areas as per a water management plan. Separate clean and dirty surface runoff. Dirty water runoff must not be allowed to enter the clean environment.</p> <p>Minimise stormwater runoff through conducting site clearing and construction during the dry season.</p>
		Surface water contamination.	N	3	2	2	4	28	Y	<p>Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.</p> <p>Monitor and control surface water quality through updating and implementing the water monitoring programme of Zibulo Colliery.</p>
		Loss of mean annual runoff.	N	3	2	2	4	28	Y	<p>Control spills through effectively cleaning spills according to the Spill Management Plan.</p> <p>Prevent spills through placement of adequate bunded storage for chemicals and hazardous material.</p> <p>Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.</p>
	Air quality	Increased levels of fugitive dust as a result of increased vehicle movement, site clearing and transportation of material. Potentially affecting the communities along the access route to the proposed ventilation shaft.	N	3	2	2	4	28	Y	<p>Control level of fugitive dust through implementing dust suppression techniques. Grade the access road before the onset of the wet season.</p> <p>Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment.</p>
		Increased levels of ambient air pollutants; i.e. carbon monoxide (CO), nitrogen dioxide (NO <sub>2</sub> ), sulphur dioxide (SO <sub>2</sub> ), particulate matter (PM <sub>10</sub> ).	N	3	2	2	4	28	Y	<p>Monitor and control through updating and implementing a dust monitoring programme.</p>
	Land use and land capability	Removal/ loss of soils and land use.	N	2	2	2	4	24	Y	<p>Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.</p> <p>Reduce erosion and compaction through, stockpiling soils, vegetate and/ or cover soil stockpiles, install erosion berms, if required.</p>
		Soil contamination from hydrocarbon spills.	N	2	2	2	4	24	Y	<p>Restrict vehicle movement to project related areas.</p> <p>Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.</p> <p>Control spills through effectively cleaning spills according to the Spill Management Plan.</p>
		Increased erosion.	N	3	2	2	4	28	Y	<p>Rehabilitate the project disturbed areas as soon as possible once construction is completed.</p> <p>Rip and profile soils that have been compacted as a result of the construction activities.</p>

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	Flora and fauna	Removal/ loss of natural vegetation and habitats.	N	2	2	2	4	24	Y	<p>Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.</p> <p>Control access to construction site through demarcating access roads and construction areas.</p> <p>Prevent trapping or hunting of fauna through the Environmental Awareness Plan.</p> <p>Implementing an Alien Species Eradication/ Control Plan will prevent the emergence/ control of any invasive species in the disturbed areas.</p> <p>Develop a fire break management programme, if needed.</p>
	Groundwater	Groundwater contamination.	N	3	2	2	4	28	Y	<p>Control stormwater runoff through stormwater management measures.</p> <p>Control spills through effectively cleaning spills according to the Spill Management Plan.</p> <p>Prevent spills through placement of adequate bunded storage for chemicals and hazardous material.</p> <p>Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.</p>
		Groundwater ingress into the ventilation shaft.	N	3	2	2	4	28	Y	<p>Prevent through sealing off ingress – in the fracture with grouting, if encountered.</p>
	Noise impacts	Increased ambient noise levels.	N	3	2	2	4	28	Y	<p>Control through noise control measures and limiting construction activities to day time periods.</p> <p>The noise levels generated by machinery, equipment must comply with the manufacturer's specifications and any deviation of these noise levels will have to be immediately addressed and rectified.</p> <p>Diesel generator associated with the operation of the raise bore drilling machine to be encapsulated and placed in such a manner that it is screened from the abutting community.</p> <p>Noise evaluation to be carried out before the activities and infrastructure is operational to determine noise mitigation measures.</p>
	Visual impacts	Increased dust levels.	N	3	2	2	4	28	Y	<p>Control level of fugitive dust through implementing dust suppression techniques.</p> <p>Control through limiting construction activities to day time periods.</p>
	Socio-economic impacts	Job creation.	N	2	2	2	4	24	Y	<p>Enhance through adhering to the Zibulo Colliery local labour procurement policies.</p>

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Infrastructure (access shaft, PCD, ventilation shaft and stone dust silo) situated within a wetland as well as other infrastructure located within the regulated areas of multiple wetlands.	Wetland/ Sensitive Landscapes	Loss of habitat through the erection of the various infrastructures.	N	4	3	2	6	44	Y	<p>Update the mines water balance on an annual basis to determine the volumes of water entering into the various wetlands (GreenGab, 2020).</p> <p>Ensure that the sewage treatment plant is working correctly and effectively. A grid can be installed at the sewage plant to contain/ stop any blockages from the change houses.</p> <p>Ensure that the PCD's are not spilling more than allowed by the IWUL.</p> <p>Grey water from the change houses can be diverted to the sewage plant and alternative management options should be considered throughout the operation.</p> <p>Water monitoring must continue as per the IWUL to determine and be aware of any changes in water quality and quantity. Additional surface- and groundwater monitoring points can be added as per specialist recommendations.</p>
		Change of hydrology to the wetland – either an increase due to storm water flow discharge or a decrease in subsurface flow due to the infrastructure.	N	4	3	2	6	44	Y	<p>Ensure that dirty water areas do not discharge into the wetlands through the use of trenches and berms.</p> <p>Maintain artificial wetlands until closure as they are currently performing various important functions.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100m from any watercourse. Oils and other potential pollutants must be disposed of at an appropriate licensed site, with the necessary agreement from the owner of such a site.</p>
		Deterioration of water quality due to the overflow of PCD 1, storm water discharge and discharge from the sewage treatment plant.	N	4	3	2	6	44	Y	<p>Alien vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the stream.</p> <p>No materials will be stockpiled within the wetland areas (unless it falls within an area that is surrounded by trenches/ berms) and driving within the wetland areas should be kept to an absolute minimum.</p> <p>A wetland specialist must establish a wetland monitoring and management programme to prevent any additional damage to the wetlands.</p>



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			Negative (N)/ Neutral Impact					Risk		
The operation of the overland conveyor belt through multiple wetlands.	Wetland/ Sensitive Landscapes	Coal spillages along the route of the conveyor belt and especially in the wetland areas.	N	4	3	3	6	48	Y	<p>Construct enclosures around the conveyor belt to prevent coal spillages, especially in the vicinity of wetlands (Wetland Consulting Services, 2005).</p> <p>Inspections will be conducted to determine any coal spillages. These coal spillages must be cleaned immediately.</p> <p>Water monitoring must continue as per the IWUL to determine and be aware of any changes in water quality and quantity. Additional surface- and groundwater monitoring points can be added as per specialist recommendations.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p>
		Noise generated by the conveyor belt.	N	4	3	3	6	48	Y	<p>A wetland specialist must establish a wetland monitoring and management programme to prevent any additional damage to the wetlands.</p> <p>The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures.</p> <p>Alien vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.</p>
		Maintenance activities conducted on the conveyor belt during the operational phase.	N	4	3	3	6	48	Y	<p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100m from any watercourse. Oils and other potential pollutants must be disposed of at an appropriate licensed site, with the necessary agreement from the owner of such a site.</p> <p>Access roads should be non-erosive, structurally stable and should not induce any flooding or safety hazard. Any damage will be repaired immediately to prevent further damage.</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.</p>
		The use and maintenance of the access road that runs along the length of the conveyor belt.	N	4	3	3	6	48	Y	<p>Soils that have become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.</p> <p>Culverts and pipes beneath the conveyor belt and roads must be inspected regularly for debris blocking the flow path of water and cleaned immediately.</p> <p>The natural migration of aquatic biota and upstream movement of fish must not be disturbed.</p> <p>Roads are to be suppressed regularly to avoid dust generation that will increase the levels of silt in the wetlands. Water used must be as per the IWUL. Dustaside can also be used for dust suppression.</p>
The activities related to the mining operation that will generate domestic and hazardous waste.  Domestic waste includes, but is not limited to paper, cardboard, plastics, metal, polystyrene, glass, tins and food waste.  Hazardous waste includes, but is not limited to hydrocarbons (oil and fuel), various filters	Surface- and groundwater	Domestic- and hazardous waste may enter into various water sources and contaminate these sources.	N	2	2	2	6	20	Y	<p>Waste disposal bins and skips must be clearly marked as to indicate domestic waste and hazardous waste (Shangoni, 2020). It is important to separate waste for proper disposal.</p>
		Coal product (being moved from the underground operations and transported via the overland conveyor belt) can be blown by the wind or transported via surface water runoff to both surface- and groundwater sources.	N	3	2	2	6	30	Y	<p>Zibulo Colliery will develop a waste management procedure which will address all of the waste streams on site and how waste will be handled and disposed of.</p> <p>Employees and visitors will be instructed via induction about the waste management procedures at Zibulo Colliery's underground. Other resources such as posters and shift talks can be used to inform and remind employees and</p>

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removed during maintenance of vehicles, coal product, paint, thinners, contaminated water, human waste, fluorescent tubes and other globes, printer cartridges, tyres and grease.		Contaminated water within the PCD's, trenches and silt traps can overflow into the surface water sources or seep through the lining into the groundwater regime.	N	2	2	2	6	20	Y	visitors about the need for waste management and recycling. Waste disposal bins/ skips will be provided on site for waste disposal. A certified and respected waste company must be appointed to remove waste and provide proof that the various waste types have been disposed of properly. Domestic waste can be taken to the nearest municipal waste site whereas hazardous material must be taken to a hazardous waste disposal facility such as the Holfontein waste disposal site. Measures can be put into place to recycle domestic and hazardous waste. Involving the local community may provide employment or financial opportunities for poorer members of the community.
		Runoff from hydrocarbon spills can enter into the surface water resources or seep into the groundwater regime.	N	2	2	2	6	20	Y	
	Soils	Coal product can be blown by the wind or transported via surface water runoff to the soils in and around the mining area.	N	3	2	2	6	30	Y	Coal product can be suppressed with sprayers at the coal silo and conveyor area to prevent unnecessary dust generation during loading and unloading of coal product stockpiles. Berms, trenches and silt traps are to be constructed around the dirty areas to ensure that dirty water enters the PCD's and clean water is contained and diverted to the clean areas. PCD's, trenches and silt traps must be inspected regularly to ensure their integrity and effectiveness to contain contaminated water and silt (Joseph, 2015). A dam structure inspection will be conducted annually by a civil specialist to check the integrity of the dam wall. Hydrocarbon spill kits must be provided by the mine, placed at areas where hydrocarbons spills and most likely and clearly marked. Once spill kits have been used and/ or filled, they must be removed by the approved waste removal contractor and replaced with new spill kits. Hydrocarbon spills must be cleaned immediately using supplied hydrocarbon spill clean-up kits. These spill kits must be inspected regularly to avoid running out of hydrocarbon spill kits. Maintenance and repairs of vehicles must be conducted at the workshop area. Any breakdowns and repairs that cannot be done at the workshop must be done with drip trays to prevent hydrocarbons from entering the clean environment. Oil traps and containment units will be constructed around the workshop area to contain oil and hydrocarbon spills. These oil containment units will be emptied by the approved waste removal company and disposed of appropriately. Oil drums and fuel tanks must be stored within a bunded wall area that can contain the volume and 10% extra of the oil drums or fuel tanks stored within them. The bunded wall area will be lined so that no oil or fuel spill can escape from it into the clean environment. General housekeeping will be conducted in and around the mining area to pick up litter. The local community can be included in major clean-up projects to spread awareness and opportunities with regards to waste management. Bathrooms, showers and laundries will be inspected to ensure that they are in a good working condition and that no human waste or contaminated water affects
		Contaminated water within the PCD's, trenches and silt traps can overflow into the surrounding soils.	N	2	2	2	6	20	Y	
		Hydrocarbon spills from vehicles can enter the soils and contaminate it.	N	2	2	2	6	20	Y	
	Visual	Both domestic- and hazardous waste can enter the clean environment and reduce the aesthetics of the area.	N	2	2	2	6	20	Y	
	Socio-economic	Domestic and hazardous waste that enters the clean environment will contaminate it, whether it is water sources or the areas where people live and affect the health of the people.	N	2	2	2	6	20	Y	
		If bathrooms are not maintained, human waste can breed diseases and affect human health.	N	3	2	2	6	30	Y	
	Wetlands and surrounding landscape	Domestic- and hazardous waste may enter into the surrounding wetland and surrounding environment and contaminate these sources.	N	2	2	2	6	20	Y	
		Coal product can be blown by the wind or transported via surface water runoff to both wetlands and the surrounding environment.	N	3	2	2	6	30	Y	

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		Contaminated water within the PCD's, trenches and silt traps can overflow into the wetlands and surrounding clean environment.	N	2	2	2	6	20	Y	the health of the employees, visitors or the environment. Any problems with the infrastructure must be reported immediately and repaired as soon as possible. Any environmental spill or emergency must be handled in terms of the Zibulo emergency preparedness plan (Joseph, 2015). Flood prevention must be conducted in terms of the surface water flood risk management plan (Golder, 2015).
		Runoff from hydrocarbon spills can enter into the wetlands and surrounding clean environment.	N	2	2	2	6	20	Y	
Rock dump (called the overburden stockpile within the approved EMPr).	Surface- and groundwater	Storm water will seep into the rock dump and either runoff into the clean environment around the dump and/ or seep into the ground water regime.	N	3	3	2	4	27	Y	Clean and dirty water separation will be implemented around the rock dump. Boreholes, in the vicinity of the rock dump, will be monitored to determine the impact it may have on the groundwater regime. The rock dump will be revegetated to prevent dust generation and the loss of topsoil through wind and water erosion. This will also ensure that the rock dump blends in with the surrounding landscape and reduce its visual impacts.
	Air quality	Dust can be generated from the topsoil that was used to cover the rock dump.	N	3	3	2	4	27	Y	
	Soils	Topsoil used to cover the rock dump will be lost through water and wind erosion.	N	3	3	2	4	27	Y	
	Visual	The rock dump is aesthetically not pleasing and will affect the general landscape.	N	3	3	2	4	27	Y	
	Socio-economic	Contaminated surface- and groundwater may affect downstream water users.	N	3	3	2	4	27	Y	
	Wetlands and surrounding landscape	Contaminated surface- and groundwater and soil may enter the surrounding wetlands and negative affect the quality and quantity of the wetlands and surrounding landscape.	N	3	3	2	4	27	Y	
A barrier pillar, as determined by Anglo standards, will be kept between the Zibulo underground and the surrounding underground mines.	Groundwater	Groundwater may seep through the barrier pillar to low lying areas, whether it is from the Zibulo underground to the neighbouring mines or vice versa.	N	2	3	3	6	24	Y	Barrier pillars must be kept and constructed as per the Zibulo procedures: Zibulo pillar design formula standard (AATC013936) and Zibulo Colliery Mandatory COP to combat roof fall accidents in UG coal mines (AATC016395). Continuous communication with other mine owners is encouraged to qualify and quantify all water make/ water flow. This will assist with monitoring any groundwater seepage from one mine to another.
Operation of the new 28 000 L bulk diesel storage tank. This includes pumping diesel and oil, respectively through separate borehole, to the underground operations.	Soil	Soil loss through wind and water erosion if soils around the storage tank are left bare.	N	2	2	2	6	20	Y	Regular inspections of the bulk diesel storage tank, boreholes, surrounding area and underground receptors to be conducted if any diesel or oil leaks are occurring. Any observed spills must be cleaned and contaminated soil must be disposed of appropriately through the relevant contractor. Hydrocarbon spill kits will be provided at the bulk diesel storage tank. The area around the bulk diesel storage tank (within the fenced area) can be vegetated to prevent unnecessary soil loss and dust generation. All delivery vehicles must be in a good working condition and maintenance must
		Diesel and oil contamination of the soil through leakage of the storage tank or when pumping to the underground workings or spillages during refilling of the bulk storage tank.	N	2	2	2	6	20	Y	
	Surface- and groundwater	Diesel and oil contamination of the surface- and especially groundwater through leakage of the storage tank or when pumping to the underground workings or spillages during	N	2	2	2	6	20	Y	

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		refilling of the bulk storage tank.								be conducted off-site. Emergency repairs must be conducted over drip trays and other soil coverings to prevent hydrocarbons from entering the environment. All employees/ contractors must adhere to the Zibulo Colliery waste management procedures. Waste bins/ skips will be provided at the bulk diesel storage tank. A fence to be constructed around the bulk diesel storage tank to protect the tank from thieves. Security can also be provided to protect the assists of Zibulo Colliery.
		Surface- and groundwater can be contaminated through increase sediment entering surface- and groundwater resources.	N	2	2	2	6	20	Y	
	Visual aspects	The bulk storage tank will affect the aesthetics of the surrounding area.	N	2	2	2	6	20	Y	
	Wetland and sensitive landscapes	Diesel and oil contamination of the wetland and sensitive landscapes through leakage of the storage tank or when pumping to the underground workings or spillages during refilling of the bulk storage tank.	N	2	2	2	6	20	Y	
	Safety	Potential theft of diesel from the bulk diesel storage tank.	N	2	2	2	6	20	Y	
Informal laydown area that is used predominantly for underground vehicles that require maintenance or repairs.	Surface water	Hydrocarbon spills from the vehicles and other parts stored at the informal laydown area can mix with surface water and runoff into the clean environment.	N	3	2	2	4	24	Y	Clean and dirty water management infrastructure to be constructed to contain dirty water runoff. Surface area to be lined to prevent any contaminants from contaminating the soil and seeping onto the groundwater. Hydrocarbon spills to be cleaned as soon as possible. Hydrocarbon spill kits to be placed at the laydown area. The water monitoring programme must include surface- and groundwater monitoring points that cover the impacts from the informal laydown area.
		Other pollutants (if any) that leak from materials stored at the laydown area can mix with surface water and runoff into the clean environment.	N	3	2	2	4	24	Y	
	Groundwater	Hydrocarbon spills from the vehicles and other parts stored at the informal laydown area can seep into the groundwater and affect the quality thereof.	N	3	2	2	4	24	Y	
		Other pollutants (if any) that leak from materials stored at the laydown area can seep into the groundwater and affect the quality thereof.	N	3	2	2	4	24	Y	
	Air quality	Exposed soils at the laydown area can lead to an increase in dust generation and a decrease in air quality.	N	3	2	2	4	24	Y	
Operation of the ventilation shaft (Vent fan no. 4), access roads and associated infrastructure.	Air quality	Increased levels of fugitive dust through the use of the access road and associated infrastructure.	N	3	1	2	4	21	Y	Restricted speed limits when using access road. Regular maintenance and service of vehicles used for maintenance and site access. The topsoil stockpile must be fenced and hydroseeded to prevent soil loss. Any terraces present must be hydroseeded to avoid erosion. Implementing dust suppression techniques, if required, on the access road. Access roads to be graded before the onset of the wet season. Effectively cleaning of hydrocarbon spills according to the Spill Management Plan. Limit the risk of hydrocarbon spills through restricting vehicle movement to areas of need. Implementing an Alien Species Eradication/ Control Plan will prevent the
	Soil and land	Soil contamination from accidental hydrocarbon spills.	N	3	1	2	4	21	Y	
	Fauna and flora	Loss of habitat/ fauna species through the use of the access road or entering areas outside of ventilation shaft boundary.	N	3	1	2	4	21	Y	
	Surface water	Increased surface runoff to the surrounding watercourses due to exposed areas of soil.	N	3	1	2	4	21	Y	

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/ N)	Management and Mitigation Measures
		Contamination of surface water resources.	N	3	1	2	4	21	Y	emergence/ control of any invasive species in the disturbed areas. Develop a fire break management programme, if needed. Prevent trapping or hunting of fauna through an environmental awareness plan.
	Noise levels	Increase in ambient noise levels through the operation of the ventilation fan the use of the access road.	N	3	1	2	4	21	Y	Construct and implement stormwater management measures and infrastructure around the affected areas as per a water management plan. Separate clean and dirty surface runoff. Dirty water runoff must not be allowed to enter the clean environment.
	Visual impact	Alteration of the natural landscape.	N	3	1	2	4	21	Y	Minimise area of disturbance to as small as practically possible. Revegetate affected areas and areas that are not in use as soon as possible. Updating and/ or implementing a water monitoring programme at Zibulo Colliery.
	Socio-economic impacts	Positive impact on the livelihoods of employees and contractors.	P	-	-	-	-	N/A	Y	Limit through landscaping and the use of appropriate, non-reflective infrastructure. Socio- economic impacts can be enhanced through the retainment of employees, implementing skills development policy in line with the Social and Labour Plan and adhering to MPM's local labour procurement policies.
<b>Decommissioning/ Closure- and Post Closure Phase</b>										
Rehabilitation and re-establishment of the wetlands.	Wetland	The wetlands that were destroyed and impacted upon will be rehabilitated as planned within the Zibulo Colliery's Wetland Offset Strategy – Wetland Rehabilitation and Management Plan (Wetland Consulting Services, 2017).	P	-	-	-	-	N/A	Y	The mitigation measures below will be implemented as to limit the impacts on the wetland.
	Topography	The area will be reshaped to accommodate the wetland rehabilitation plan. This will be aimed at returning the topography to as close as possible to its pre-mining state.	P	-	-	-	-	N/A	N	The area must be sloped as to be free draining and ensure that the water drains to the wetland.
	Fauna and flora	The re-establishment of the wetlands will allow natural fauna and flora to return to the area. This will improve the biodiversity of the rehabilitated area.	P	-	-	-	-	N/A	N	Natural vegetation must be used in the rehabilitation process and the assistance of a botanist/ wetland specialist must be acquired during this process. Invasive flora and fauna species must be controlled to prevent an intrusion into the wetland. Care must be taken when removing these species as to prevent further damage (through the use of hazardous substances) to the wetland and natural fauna and flora species. An alien vegetation management programme will be developed for the closure phase. Fire management must be considered as burning a wetland must only occur every 4 to 5 years. Livestock must not be allowed into the wetland area; this can through the development of a livestock management plan. No poaching/ hunting of any fauna species will be allowed. Signs must be placed on the surrounding fences to inform people hereof.
	Surface- and groundwater	Construction vehicles may spill hydrocarbons into surface water sources during the rehabilitation and re-establishment of the wetlands.	N	3	1	1	4	18	Y	Construction vehicles must be serviced as required (off-site or away from the rehabilitation area) and maintained in a good working condition to prevent hydrocarbons spills. Any hydrocarbon spill must be cleaned immediately using an appropriate oil spill kit (which must be available on-site) and removed by an approved contractor.

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/N)	Management and Mitigation Measures
		The re-establishment of the wetlands will result in an improved in the quality and quantity of both surface- and groundwater.	P	-	-	-	-	N/A	N	Water monitoring will continue after rehabilitation to determine any residual impacts on the surface- and groundwater.
	Air quality	Generation of dust from construction vehicles and other construction activities during the re-establishment of the wetlands.	N	3	1	2	4	21	Y	Rehabilitation must be planned for only a short period of time, preferable before the onset of the dry- and windy seasons. Dust suppression can be conducted to decrease dust generation from construction vehicles.
		The revegetation of the wetland area will improve the air quality of the surrounding area.	P	-	-	-	-	N/A	N	Natural vegetation must be used in the rehabilitation process and the assistance of a botanist/ wetland specialist must be acquired during this process. Invasive flora and fauna species must be controlled to prevent an intrusion into the wetland. Care must be taken when removing these species as to prevent further damage (through the use of hazardous substances) to the wetland and natural fauna and flora species. Fire management must be considered as burning a wetland must only occur every 4 to 5 years. Livestock must not be allowed into the wetland area; this can through the development of a livestock management plan. No poaching/ hunting of any fauna species will be allowed. Signs must be placed on the surrounding fences to inform people hereof.
	Noise	Noise will only be generated for a short period of time while the construction and re-establishment of the wetlands are underway. This will coincide with the general rehabilitation of the mine.	N	3	1	2	4	21	Y	Vehicles must be serviced as required and maintained in a good condition to limit the noise levels generated by their use and movement.
	Soils	Construction vehicles may spill hydrocarbons onto the soils during the rehabilitation and re-establishment of the wetlands.	N	3	1	1	4	18	Y	Construction vehicles must be serviced as required (off-site or away from the rehabilitation area) and maintained in a good working condition to prevent hydrocarbons spills. Any hydrocarbon spill must be cleaned immediately using an appropriate oil spill kit (which must be available on-site) and removed by an approved contractor.
		Soils will be returned to as close as possible to their original locations during the re-establishment of the wetland. This will assist with the rehabilitation process and allowing the wetland to function normally.	P	-	-	-	-	N/A	N	A pedologist must be consulted before and after rehabilitation to assist with the placement of soils as well as the testing of soils after rehabilitation for the purpose of fertiliser requirements.
	Land use and capability	The land use and capability will be returned to a natural state. This is an improvement to the pre-mining state as the wetlands were ploughed and used for agricultural land (thus the formation of the relict wetland).	P	-	-	-	-	N/A	N	Should the areas around the targeted wetlands be used for agricultural activities, agricultural use of herbicides, pesticides and fertilizers in the vicinity of the wetlands should be carefully controlled to avoid toxic effects on the flora and fauna occurring within the wetlands. A vegetated buffer of at least 20m is recommended between any agricultural lands and wetland areas so as to limit impacts associated with sedimentation and pollutant runoff. This should be extended to as much as 50m where steep slopes occur or where intensive cultivation is undertaken. Cultivation techniques must also employ measures to limit erosion and sediment loss from the cultivated fields, i.e. contour ploughing, etc.
	Visual	Rehabilitating the mining area and the wetlands will improve	P	-	-	-	-	N/A	N	Natural vegetation must be used in the rehabilitation process and the assistance

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/ N)	Management and Mitigation Measures
		the aesthetics of the area.								of a botanist/ wetland specialist must be acquired during this process. Invasive flora and fauna species must be controlled to prevent an intrusion into the wetland. Care must be taken when removing these species as to prevent further damage (through the use of hazardous substances) to the wetland and natural fauna and flora species. Fire management must be considered as burning a wetland must only occur every 4 to 5 years.
	Socio-economic	The wetland may be impacted upon by agricultural and grazing activities once the rehabilitation has been completed.	N	3	3	2	4	27	Y	Should the areas around the targeted wetlands be used for agricultural activities, agricultural use of herbicides, pesticides and fertilizers in the vicinity of the wetlands should be carefully controlled to avoid toxic effects on the flora and fauna occurring within the wetlands. A vegetated buffer of at least 20m is recommended between any agricultural lands and wetland areas so as to limit impacts associated with sedimentation and pollutant runoff. This should be extended to as much as 50m where steep slopes occur or where intensive cultivation is undertaken. Cultivation techniques must also employ measures to limit erosion and sediment loss from the cultivated fields, i.e. contour ploughing, etc.
		Various flora species can be harvested by local communities for use as traditional medicine and thus provide an income to these communities.	P	-	-	-	-	N/A	Y	Locals must be educated and monitored to ensure that over harvesting does not take place as to decrease the variety of flora species.
<p>The activities related to the rehabilitation and post-closure usage of the mining operation that will generate domestic and hazardous waste.</p> <p>Domestic waste includes, but is not limited to paper, cardboard, plastics, metal, polystyrene, glass, tins and food waste.</p> <p>Hazardous waste includes, but is not limited to hydrocarbons (oil and fuel), various filters removed during maintenance of vehicles, coal product, paint, thinners, contaminated water, human waste, fluorescent tubes and other globes, printer cartridges, tyres and grease.</p>	Surface- and groundwater	Domestic- and hazardous waste may enter into various water sources and contaminate these sources.	N	2	2	2	6	20	Y	Waste disposal bins and skips must be clearly marked as to indicate domestic waste and hazardous waste (Shangoni, 2020). It is important to separate waste for proper disposal.
		Coal product can be blown by the wind or transported via surface water runoff to both surface- and groundwater sources.	N	3	2	2	6	30	Y	Zibulo Colliery will develop a waste management procedure which will address all of the waste streams on site and how waste will be handled and disposed of.
		Contaminated water within the PCD's, trenches and silt traps can overflow into the surface water sources or seep through the lining into the groundwater regime.	N	2	2	2	6	20	Y	Employees and visitors will be instructed via induction about the waste management procedures at Zibulo Colliery's underground. Other resources such as posters and shift talks can be used to inform and remind employees and visitors about the need for waste management and recycling.
		Runoff from hydrocarbon spills can enter into the surface water resources or seep into the groundwater regime.	N	2	2	2	6	20	Y	Waste disposal bins/ skips will be provided on site for waste disposal.
	Soils	Coal product can be blown by the wind or transported via surface water runoff to the soils in and around the mining area.	N	3	2	2	6	30	Y	A certified and respected waste company must be appointed to remove waste and provide proof that the various waste types have been disposed of properly. Domestic waste can be taken to the nearest municipal waste site whereas hazardous material must be taken to a hazardous waste disposal facility such as the Holfontein waste disposal site.
		Contaminated water within the PCD's, trenches and silt traps can overflow into the surrounding soils.	N	2	2	2	6	20	Y	Measures can be put into place to recycle domestic and hazardous waste. Involving the local community may provide employment or financial opportunities for poorer members of the community.
		Hydrocarbon spills from vehicles can enter the soils and contaminate it.	N	2	2	2	6	20	Y	Coal product can be suppressed with sprayers at the coal silo and conveyor area to prevent unnecessary dust generation during loading and unloading of coal product stockpiles.
	Visual	Both domestic- and hazardous waste can enter the clean environment and reduce the aesthetics of the area.	N	2	2	2	6	20	Y	Berms, trenches and silt traps are to be constructed around the dirty areas to ensure that dirty water enters the PCD's and clean water is contained and diverted to the clean areas.
	Socio-economic	Domestic and hazardous waste that enters the clean environment will contaminate it, whether it is water sources	N	2	2	2	6	20	Y	PCD's, trenches and silt traps must be inspected regularly to ensure their

Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/N)	Management and Mitigation Measures
		or the areas where people live and affect the health of the people.								integrity and effectiveness to contain contaminated water and silt (Joseph, 2015). A dam structure inspection will be conducted annually by a civil specialist to check the integrity of the dam wall. Hydrocarbon spill kits must be provided by the mine, placed at areas where hydrocarbons spills and most likely and clearly marked. Once spill kits have been used and/or filled, they must be removed by the approved waste removal contractor and replaced with new spill kits. Hydrocarbon spills must be cleaned immediately using supplied hydrocarbon spill clean-up kits. These spill kits must be inspected regularly to avoid running out of hydrocarbon spill kits. Maintenance and repairs of vehicles must be conducted at the workshop area. Any breakdowns and repairs that cannot be done at the workshop must be done with drip trays to prevent hydrocarbons from entering the clean environment. Oil traps and containment units will be constructed around the workshop area to contain oil and hydrocarbon spills. These oil containment units will be emptied by the approved waste removal company and disposed of appropriately. Oil drums and fuel tanks must be stored within a bunded wall area that can contain the volume and 10% extra of the oil drums or fuel tanks stored within them. The bunded wall area will be lined so that no oil or fuel spill can escape from it into the clean environment. General housekeeping will be conducted in and around the mining area to pick up litter. The local community can be included in major clean-up projects to spread awareness and opportunities with regards to waste management. Bathrooms, showers and laundries will be inspected to ensure that they are in a good working condition and that no human waste or contaminated water affects the health of the employees, visitors or the environment. Any problems with the infrastructure must be reported immediately and repaired as soon as possible. Any environmental spill or emergency must be handled in terms of the Zibulo emergency preparedness plan (Joseph, 2015).
		If bathrooms are not maintained, human waste can breed diseases and affect human health.	N	3	2	2	6	30	Y	
	Wetlands and surrounding landscape	Domestic- and hazardous waste may enter into the surrounding wetland and surrounding environment and contaminate these sources.	N	2	2	2	6	20	Y	
		Coal product can be blown by the wind or transported via surface water runoff to both wetlands and the surrounding environment.	N	3	2	2	6	30	Y	
		Contaminated water within the PCD's, trenches and silt traps can overflow into the wetlands and surrounding clean environment.	N	2	2	2	6	20	Y	
		Runoff from hydrocarbon spills can enter into the wetlands and surrounding clean environment.	N	2	2	2	6	20	Y	
Removal of the 28 000 L bulk diesel storage tank and the fences. This includes sealing of the two cased boreholes that pumped diesel and oil, respectively, to the underground operations. The area will be used as agricultural land as before construction and operation.	Soil	Loss of topsoil through wind and water erosion as well as soil compaction through the movement of machines.	N	3	1	2	4	21	Y	Removal and rehabilitation must be conducted, as far as possible, during the dry season. All construction vehicles must be in a good working condition and maintenance must be conducted off-site. Emergency repairs must be conducted over drip trays and other soil coverings to prevent hydrocarbons from entering the environment. Hydrocarbon spill kits will be provided at the closure site. Dust suppression can be conducted to prevent unnecessary dust generation during the closure phase. All employees/ contractors must adhere to the Zibulo Colliery waste management procedures. Waste bins/ skips will be provided at the closure site. The borehole casing must be removed deep enough to prevent damage to farming equipment when the land is ploughed.
		Hydrocarbon spills from construction vehicles can contaminate the soils.	N	3	1	2	4	21	Y	
	Surface- and Groundwater	Surface- and groundwater can be contaminated through increase sediment entering surface- and groundwater resources.	N	3	1	2	4	21	Y	
		Hydrocarbon spills from construction vehicles can contaminate surface- and groundwater resources.	N	3	1	2	4	21	Y	
	Visual	The removal of the bulk storage tank will affect the aesthetics of the surrounding area.	P	-	-	-	-	N/A	N	
Air quality	Construction vehicles will generate dust during construction and drilling. This will affect the surrounding air quality.	N	3	1	2	4	21	Y		



Description of Activity	Environmental Aspect	Nature of the Impact (Risk) on the Environment and Human Health	Positive (P)/ Negative (N)/ Neutral Impact	Probability	Duration	Scale	Magnitude	Significance/ Risk	Mitigation Required (Y/N)	Management and Mitigation Measures
	Wetland/ Sensitive landscapes	Sediment (including dust fallout) and hydrocarbons from closure activities can enter the surrounding wetland/ sensitive landscapes.	N	3	1	2	4	21	Y	
	Waste generation	General and hazardous waste will be generated during the closure and removal activities.	N	3	1	2	4	21	Y	
Removal of the ventilation shaft (Vent fan no. 4) and associated infrastructure and the sealing of the drilled boreholes.	Soil erosion	Removal of infrastructure and the overall rehabilitation of the site. These impacts will only be negative during the removal of the infrastructure, once rehabilitation is complete, the impacts will become positive.	N	3	1	2	4	21	Y	All structures comprising the construction site office or laydown area are to be removed from site. The construction laydown area is to be checked for spills of substances such as oil etc, and these shall be cleaned up.
	Surface- and groundwater		N	3	1	2	4	21	Y	All hardened surfaces within the construction site laydown area must be ripped, all imported materials removed, and the area shall be levelled in line with the mine's rehabilitation requirements for the area.
	Air quality		N	3	1	2	4	21	Y	Surfaces are to be checked for waste products from activities such as concreting and cleared. All surfaces hardened due to construction activities are to be ripped and imported material thereon removed.
	Fauna and flora		N	3	1	2	4	21	Y	All rubble is to be removed from the site to in line with the local municipality waste management procedures. Burying of rubble on site is prohibited. The construction camp site is to be cleared of all litter.
	Sensitive landscapes		N	3	1	2	4	21	Y	Fences, barricades and demarcations associated with the camp site are to be removed from the site unless stipulated otherwise by the PM. Any elements not removed, and to be used in operation, should be included in the mine's EMS. All residual spoil and topsoil stockpiles must be used for rehabilitation as described in the Zibulo Colliery rehabilitation procedures. All damaged areas shall be rehabilitated upon completion of the contract. All natural areas impacted during construction must be rehabilitated as required by the rehabilitation plan. Rehabilitated areas will be seeded with locally indigenous vegetation. Rehabilitation must take place in a phased approach as soon as possible. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. The site needs to be monitored on a monthly basis to identify the emergence of alien species and any erosion concerns. Solid waste separation and recycling must take place for the duration of the operational phase for the development in line with the mine's waste management procedures.

SECTION EIGHT

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**Environmental Management Programme  
Amendments and Reasons for Amendments**

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## **8. ENVIRONMENTAL MANAGEMENT PROGRAMME AMENDMENTS**

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### **8.1 REASONS FOR THE AMENDMENT OF THE ZIBULO COLLIERY (UG) EMPR**

Anglo American Inyosi Coal (Pty) Ltd conducts yearly external environmental audits to ensure compliance with the commitments within the approved EMPr and EAs. During the 2019 external environmental audit the inadequacies in terms of Regulation 34 of the EIA Regulations, 2014 (Table 2-1) were identified and it was recommended that the relevant sections/ impacts/ commitments (within the approved EMPr) be updated, removed, amended or reworded (Shangoni, 2019). By amending the NEMA EA and the approved Zibulo Colliery's EMPr (Part 2 amendment, as per the NEMA EIA Regulations, 2014), Anglo American Inyosi Coal (Pty) Ltd can continue mining with updated EMPr commitments that take the current status of the underground mining into account and thus prevent unintentional impacts on the environment and public health and safety. A Part 2 amendment has been used as it refers to change of scope as the amendments will either result in an increase or a change in nature of the environmental impacts (South Africa, Environmental Impact Assessment Regulations, 2014).

Anglo American Inyosi Coal (Pty) Ltd is committed to ensure compliance with all relevant national and international laws, regulations and standards.

### **8.2 EMPR AND EA AMENDMENT TABLE**

Table 8-1 below indicates the original EMPr and EA commitments as per the approved EMPr and issued EA. The table also shows the proposed amended EMPr and EA commitments based on the reasons for amendment. These proposed new commitments take into account what is currently happening at the Zibulo Colliery Underground as well as the removal of those commitments that have not taken place or seen as null and void. New proposed commitments have also been added that were not considered within the original EMPr and EA. These new proposed commitments include the impacts on the wetlands (during all phases), waste management (including the waste rock dump), the movement of Ventilation Shaft no. 1's infrastructure, the construction of a 28 000 L bulk diesel storage tank, the construction of Ventilation Shaft no. 4 and various other commitments that are obsolete and that have changed since the start of the mining operations.

**Table 8-1: EMPr and EA Amendments**

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
<b>EMPr Amendments</b>				
<b>6.1: Construction Phase</b>				
<b>6.1.13: Sensitive landscapes</b>				
<p>Construction of the various infrastructures within the wetlands as well as within the regulated area of various wetlands.</p>	<p>Wetlands/ Sensitive landscapes.</p>	<p>N/A.</p>	<p>Construction to be conducted during the dry season to decrease the impact on the wetlands (Wetland Consulting Services, 2005).</p> <p>Construction activities must not take place within the 1:100 year flood-line or within a horizontal distance of 100m from any watercourse, estuary, borehole or well, whichever is the greatest, unless authorised within the IWUL.</p> <p>The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures.</p> <p>The Licensee must ensure that structures such as the river diversions, river road crossings, weirs and the culverts must withstand the 1:100 year flood line.</p> <p>The structure of temporary crossings must be non-erosive, structurally stable and must not induce any flooding or safety hazard. Temporary crossings must be inspected monthly for accumulation of debris, blockage, erosion of abutments and overflow areas. Debris must be removed and damages must be repaired and reinforced immediately.</p> <p>Construction activities shall start up-stream and proceed into a down-stream direction, so that the recovery processes can start immediately, without further disturbance from upstream construction works.</p> <p>The natural migration of aquatic biota and upstream movement of fish must not be disturbed.</p> <p>The development may not impede natural drainage lines.</p> <p>The construction camp shall not be located within the 1:100 year flood line or within a 100m of any watercourse, whatever is the greatest.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100 meters from any watercourse or estuary. Oils and other potential pollutants must be disposed of at an appropriate licensed site.</p> <p>The system shall be maintained in a state of good repair and standby pumps must be provided.</p> <p>Pollutions caused by spills from the conveyances must be prevented through proper maintenance and effective protective measures especially near all stream crossings.</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.</p> <p>Alien vegetation must not be allowed- to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.</p> <p>Soils that have become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.</p>	<p><b>Addition:</b> These commitments have been added to the EMPr as per the updated wetland study (Appendix 1) and in alignment with the WUL. The commitments include all construction phase activities that were not present in the approved EMPr.</p>

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
			<p>The extent of disturbance should be limited by limiting all construction activities to the servitude as far as practically possible.</p> <p>No materials should be stockpiled within the wetland areas along the route and driving within the wetland areas should be kept to an absolute minimum.</p> <p>Poaching and the removal of wetland plants are to be prohibited. Employees/ contractors can be informed during the various safety meetings.</p> <p>As far as possible, the existing road and farm tracks should be used as the service road for the conveyor and to provide access during construction as this will reduce the extent of the disturbed area.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>Monitor will be conducted on a monthly basis at water resources at the surface water monitoring points and groundwater monitoring points to determine the impact of the construction and other activities on the water quality by taking samples at the monitoring points as per the WUL.</p> <p>All conditions within the approved IWUL (if not mentioned in this EMPr amendment report) must be adhered to.</p>	
<p>Construction of the overland conveyor belt through various wetland systems.</p>	<p>Wetlands/ Sensitive Landscapes.</p>	<p>N/A.</p>	<p>The conveyor belt should be constructed in such a way that sufficient space remains underneath the conveyor belt to allow for free movement of fauna species such as small mammals and herpetofauna. A suitably qualified specialist should be consulted in this regard.</p> <p>No construction activity may take place within the 1:100 year flood line or the delineated riparian habitat, whichever is the greatest, or within a 500m radius from the boundary of any wetland unless authorised by the IWUL.</p> <p>No site activities may occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance.</p> <p>The conveyor should span the entire width of the valley bottom crossing. Conveyor footings within the wetlands should be kept minimal. The conveyor must be constructed on piles and gantries preferable during the dry season (Wetland Consulting Services, 2005).</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse(s).</p> <p>The necessary erosion prevention measures must be employed to ensure the sustainability of all structures.</p> <p>The height, width and length of structures must be limited to the minimum dimension necessary to accomplish the intended function.</p> <p>Structures must not be damaged by floods exceeding the magnitude of floods occurring on average once in every 100 years.</p> <p>Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.</p> <p>Structures must be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas – debris must be removed and damages must be repaired and reinforced</p>	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added as to align the EMPr with the IWUL.</p>

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
			<p>immediately.</p> <p>The construction camp must be located outside the extent of the watercourse(s) and must be recovered and removed one (1) month after construction has been completed.</p> <p>During construction erosion berms shall be installed to prevent gully formation, according to the slope.</p> <p>All areas affected by construction shall be rehabilitated upon completion of the construction phase of the development. Areas shall be reseeded with indigenous vegetation species as required, and the use of seed nets is recommended to prevent erosion.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or delineated riparian habitat, whichever is the greatest. Oils and other potential pollutants must be disposed of at an appropriate licensed site.</p> <p>During construction phase no vehicles shall be allowed to indiscriminately drive through any wetland areas.</p> <p>Poaching and the removal of wetland plants are to be prohibited. Employees/ contractors can be informed during the various safety meetings.</p> <p>Alien and invader vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.</p> <p>As far as possible, the existing road and farm tracks should be used as the service road for the conveyor and to provide access during construction as this will reduce the extent of the disturbed area.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>Monitor will be conducted on a monthly basis at water resources at the surface water monitoring points and groundwater monitoring points to determine the impact of the construction and other activities on the water quality by taking samples at the monitoring points as per the WUL.</p> <p>All conditions within the approved IWUL (if not mentioned in this EMPr amendment report) must be adhered to.</p>	
<p>Site preparation, construction and installation of the new 28 000 L bulk diesel storage tank. This includes the drilling of the two cased boreholes that will pump diesel and oil, respectively, to the underground operations.</p>	<p>Soil.</p> <p>Surface- and Groundwater.</p> <p>Visual.</p> <p>Air quality.</p> <p>Wetland/ Sensitive landscapes.</p>	<p>N/A.</p>	<p>Site preparation, construction and installation must be conducted, as far as possible, during the dry season.</p> <p>The construction area must be kept as small as practically possible.</p> <p>All construction and drilling vehicles must be in a good working condition and maintenance must be conducted off-site. Emergency repairs must be conducted over drip trays and other soil coverings to prevent hydrocarbons from entering the environment.</p> <p>Hydrocarbon spill kits will be provided at the construction site.</p> <p>Dust suppression can be conducted to prevent unnecessary dust generation during the construction phase.</p> <p>All employees/ contractors must adhere to the Zibulo Colliery waste management procedures.</p>	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added.</p> <p>Zibulo Colliery is planning to construct a new 23 000 L bulk diesel storage tank on surface (within Zibulo's mining right and on top of Anglo Americans surface rights). This new storage tank will be connected to a 10 000L underground diesel storage tank (connected via a newly drilled borehole) located within the underground workings, a 100 m below the surface. A separate borehole for the pumping of oil will also be drilled, both of the boreholes will be cased. Diesel and oil will be pumped through the respective boreholes to the underground workings. Appendix 4</p>

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
	Waste generation.		<p>Waste bins/ skips will be provided at the construction site.</p> <p>The area around the bulk diesel storage tank (within the fenced area) can be vegetated to prevent unnecessary soil loss and dust generation.</p>	<p>indicates the location and design of the bulk diesel storage tank. The area where construction, installation and operation will take place within a heavily modified maize field and will thus result in low impacts on the surrounding environment. The storage tank is situated within a bunded box that prevents leakages into the surrounding environment. The construction of this bulk diesel tank does not trigger any new listing notices and thus no new EA application was required.</p>
Contractors camp site preparation, construction site preparation, drilling and construction of the ventilation shaft (Vent fan no. 4) and associated infrastructure.	Soil quality.	N/A.	<p>Servicing of equipment to be undertaken prior to camp site establishment.</p> <p>Clean all spillages as highlighted in the Emergency Preparedness Plan or Spill Management Plan.</p> <p>Rip all compacted areas.</p> <p>The topsoil stockpile must be fenced and hydroseeded to prevent soil loss.</p> <p>Any terraces present must be hydroseeded to avoid erosion.</p>	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added.</p> <p>Zibulo Colliery proposes to construct a new ventilation shaft (Ventilation shaft number 4) to increase the supply of air to the underground operations. Vent fan no. 4 will ensure that underground mining can continue into the northern areas of the mining area and provide employees with sufficient levels of air. This ventilation fan will be constructed in agricultural fields, on a surface area owned by Anglo American Inyosi Coal (Pty) Ltd, to reduce the impact on the environment.</p>
	Surface water.		<p>Construct and implement stormwater management measures and infrastructure around the affected areas as per a water management plan. Separate clean and dirty surface runoff. Dirty water runoff must not be allowed to enter the clean environment.</p> <p>Minimise stormwater runoff through conducting site clearing and construction during the dry season.</p> <p>Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.</p> <p>Monitor and control surface water quality through updating and implementing the water monitoring programme of Zibulo Colliery.</p> <p>Control spills through effectively cleaning spills according to the Spill Management Plan.</p> <p>Prevent spills through placement of adequate bunded storage for chemicals and hazardous material.</p> <p>Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.</p>	
	Air quality.		<p>Control level of fugitive dust through implementing dust suppression techniques. Grade the access road before the onset of the wet season.</p> <p>Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment.</p> <p>Monitor and control through updating and implementing a dust monitoring programme.</p>	
	Land use and land		<p>Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.</p>	

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
	capability.		Reduce erosion and compaction through, stockpiling soils, vegetate and/ or cover soil stockpiles, install erosion berms, if required.	
			Restrict vehicle movement to project related areas.	
			Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.	
			Control spills through effectively cleaning spills according to the Spill Management Plan.	
			Rehabilitate the project disturbed areas as soon as possible once construction is completed.	
			Rip and profile soils that have been compacted as a result of the construction activities.	
	Flora and fauna.		Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.	
			Control access to construction site through demarcating access roads and construction areas.	
			Prevent trapping or hunting of fauna through the Environmental Awareness Plan.	
			Implementing an Alien Species Eradication/ Control Plan will prevent the emergence/ control of any invasive species in the disturbed areas.	
			Develop a fire break management programme, if needed.	
	Groundwater.		Control stormwater runoff through stormwater management measures.	
			Control spills through effectively cleaning spills according to the Spill Management Plan.	
			Prevent spills through placement of adequate bunded storage for chemicals and hazardous material.	
			Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.	
			Prevent through sealing off ingress – in the fracture with grouting, if encountered.	
	Noise impact.		Control through noise control measures and limiting construction activities to day time periods.	
			The noise levels generated by machinery, equipment must comply with the manufacturer's specifications and any deviation of these noise levels will have to be immediately addressed and rectified.	
			Diesel generator associated with the operation of the raise bore drilling machine to be encapsulated and placed in such a manner that it is screened from the abutting community.	
			Noise evaluation to be carried out before the activities and infrastructure is operational to determine noise mitigation measures.	
Visual impact.	Control level of fugitive dust through implementing dust suppression techniques.			
	Control through limiting construction activities to day time periods.			



Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
	Socio-economic impacts.		Enhance through adhering to the Zibulo Colliery local labour procurement policies.	
<b>6.2: Operational Phase</b>				
<b>6.2.8: Surface Water</b>				
Operation of the conveyor belt.	Surface water quality.	Regular inspections of stream crossings and the remainder of the conveyor servitude will be undertaken and any coal spillages cleaned up.	Regular inspections of stream crossings and the remainder of the conveyor servitude will be undertaken and any coal spillages report to the environmental team and cleaned according to the Zibulo Spill Handling Procedure (Doc No. AATC003255).	<b>Amendment:</b> This commitment has been reworded to reflect what is currently happening on site.
<b>6.2.9: Groundwater</b>				
Underground mining activities.	Groundwater quality and quantity.	Barrier pillars of 100m should be left between all adjacent mining sections to prevent the migration of groundwater to low-lying areas, during the operational phase.	Barrier pillars, as determined by Anglo standards, will be left between all adjacent mining sections to prevent the migration of groundwater to low-lying areas, during the operational phase.	<b>Amendment:</b> This commitment has been reworded as to align with Anglo standards that determine the thickness of the barrier pillar left between the mine and surrounding mines.
Operation of the Pollution Control Dams (PCD's).	Groundwater quality.	Install toe drains at the dirty water dams to intercept most of the seepage and monitor groundwater quality down-gradient of the dirty water dams.	N/A.	<b>Deletion:</b> This commitment has been removed as the PCD's are lined and no toe drains are required to intercept seepage. Regular monitoring is still being conducted to determine any cracks in the lining and impacts on the groundwater regime.
Underground mining activities.	Groundwater quantity.	Continuous monitoring of external user's boreholes and monitoring boreholes at the graben structure will indicate whether a loss in yield has taken place due to mining activities.	N/A.	<b>Deletion:</b> This commitment has been deleted from the EMPr as recent groundwater modelling indicate that there is no drop in groundwater levels at external users' boreholes or at the graben structure. No complaints have been received with regards to a decline in groundwater availability. As the underground mining expands, more boreholes will be drilled to continuously monitor the groundwater.
<b>6.2.11: Vibration and Noise</b>				
Transport of coal via the conveyor belt through the various wetlands.	Water quality and sensitive landscapes.	The conveyor belts will be kept gentle over the river crossings to minimise potential collection of water at the low point of the conveyor, should wet coal be placed on the conveyor belt.	The gradient of the conveyor belts over the river crossings will be kept as low as possible to minimise potential collection of water at the low point of the conveyor, should wet coal be placed on the conveyor belt.	<b>Amendment:</b> This commitment has been reworded as to align with the activities on-site and reflect current operating procedures.
Operation of the conveyor belt.	Noise and air quality.	The eastern side of the conveyor will be enclosed with a Doghouse enclosure.	The top and western side of the conveyor will be enclosed with a Doghouse enclosure.	<b>Amendment:</b> This commitment has been amended as only sheeting will be necessary on the western side of the conveyor belt. This has already been done, and one side of the conveyor needs to remain open for maintenance purposes.
Operation of the conveyor belt and the ventilation shaft.	Noise and vibration.	A wall adjacent to Mr Allen's house will be implemented during construction. A noise barrier will be constructed to be 2m above the vent shaft fans at Rietvlei to mitigate the impact on Mr Koos Boshoff's house.	N/A.	<b>Deletion:</b> This commitment has been removed as specialist studies indicated that the noise levels at Mr Allen's house is insignificant and no complaints have been received (Shangoni, 2019).

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
<b>6.2.13: Sensitive Landscapes</b>				
<p>Infrastructure (access shaft, PCD, ventilation shaft and stone dust silo) situated within a wetland as well as other infrastructure located within the regulated areas of multiple wetlands.</p>	<p>Wetlands/ Sensitive Landscapes</p>	<p>N/A.</p>	<p>Update the mines water balance on an annual basis to determine the volumes of water entering into the various wetlands (GreenGab, 2020).</p> <p>Ensure that the sewage treatment plant is working correctly and effectively. A grid can be installed at the sewage plant to contain/ stop any blockages from the change houses.</p> <p>Ensure that the PCD's are not spilling more than allowable by the IWUL.</p> <p>Grey water from the change houses can be diverted to the sewage plant and alternative management options should be considered throughout the operation.</p> <p>Water monitoring must continue as per the IWUL to determine and be aware of any changes in water quality and quantity. Additional surface- and groundwater monitoring points can be added as per specialist recommendations.</p> <p>Ensure that dirty water areas do not discharge into the wetlands through the use of trenches and berms.</p> <p>Maintain artificial wetlands until closure as they are currently performing various important functions.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100m from any watercourse. Oils and other potential pollutants must be disposed of at an appropriate licensed site, with the necessary agreement from the owner of such a site.</p> <p>Alien vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the stream.</p> <p>No materials will be stockpiled within the wetland areas (unless it falls within an area that is surrounded by trenches/ berms) and driving within the wetland areas should be kept to an absolute minimum.</p> <p>A wetland specialist must establish a wetland monitoring and management programme to prevent any additional damage to the wetlands.</p>	<p><b>Addition:</b> These commitments have been added to the EMPr as per the updated wetland study (Appendix 1) and in alignment with the WUL. The commitments include all operational phase activities that were not present in the approved EMPr.</p>
<p>The operation of the overland conveyor belt through multiple wetlands.</p>	<p>Wetlands/ Sensitive Landscapes.</p>	<p>N/A.</p>	<p>Construct enclosures around the conveyor belt to prevent coal spillages, especially in the vicinity of wetlands (Wetland Consulting Services, 2005).</p> <p>Inspections will be conducted to determine any coal spillages. These coal spillages must be cleaned immediately.</p> <p>Water monitoring must continue as per the IWUL to determine and be aware of any changes in</p>	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added as to align the EMPr with the IWUL.</p>

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
			<p>water quality and quantity. Additional surface- and groundwater monitoring points can be added as per specialist recommendations.</p> <p>Bio-monitoring (IHAS and SASS) shall be conducted to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities that of impeding, altering or diverting the water resource.</p> <p>A wetland specialist must establish a wetland monitoring and management programme to prevent any additional damage to the wetlands.</p> <p>The necessary erosion prevention mechanisms shall be employed to ensure the sustainability of all structures.</p> <p>Alien vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.</p> <p>Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100m from any watercourse. Oils and other potential pollutants must be disposed of at an appropriate licensed site, with the necessary agreement from the owner of such a site.</p> <p>Access roads should be non-erosive, structurally stable and should not induce any flooding or safety hazard. Any damage will be repaired immediately to prevent further damage.</p> <p>Increased runoff due to vegetation clearance and/ or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.</p> <p>Soils that have become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.</p> <p>Culverts and pipes beneath the conveyor belt and roads must be inspected regularly for debris blocking the flow path of water and cleaned immediately.</p> <p>The natural migration of aquatic biota and upstream movement of fish must not be disturbed.</p> <p>Roads are to be suppressed regularly to avoid dust generation that will increase the levels of silt in the wetlands. Water used must be as per the IWUL. Dustaside can also be used for dust suppression.</p>	
<b>6.2.16: Waste Management</b>				
<p>The activities related to the mining operation that will generate domestic and hazardous waste.</p> <p>Domestic waste includes, but is not limited to paper, cardboard, plastics, metal, polystyrene, glass, tins and food waste.</p> <p>Hazardous waste includes, but is not limited to hydrocarbons (oil and fuel), various filters removed during maintenance of vehicles, coal product, paint, thinners, contaminated water, human waste, fluorescent tubes and other globes,</p>	<p>Surface- and groundwater.</p> <p>Soils.</p>	<p>N/A.</p>	<p>Waste disposal bins and skips must be clearly marked as to indicate domestic waste and hazardous waste (Shangoni, 2020). It is important to separate waste for proper disposal.</p> <p>Zibulo Colliery will develop a waste management procedure which will address all of the waste streams on site and how waste will be handled and disposed of.</p> <p>Employees and visitors will be instructed via induction about the waste management procedures at Zibulo Colliery's underground. Other resources such as posters and shift talks can be used to inform and remind employees and visitors about the need for waste management and recycling.</p> <p>Waste disposal bins/ skips will be provided on site for waste disposal.</p> <p>A certified and respected waste company must be appointed to remove waste and provide proof that the various waste types have been disposed of properly. Domestic waste can be taken to the nearest municipal waste site whereas hazardous material must be taken to a hazardous</p>	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have now been added.</p>

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
printer cartridges, tyres and grease.			waste disposal facility such as the Holfontein waste disposal site.	
			Measures can be put into place to recycle domestic and hazardous waste. Involving the local community may provide employment or financial opportunities for poorer members of the community.	
			Coal product can be suppressed with sprayers at the coal silo and conveyor area to prevent unnecessary dust generation during loading and unloading of coal product stockpiles.	
			Berms, trenches and silt traps are to be constructed around the dirty areas to ensure that dirty water enters the PCD's and clean water is contained and diverted to the clean areas.	
	Visual.		PCD's, trenches and silt traps must be inspected regularly to ensure their integrity and effectiveness to contain contaminated water and silt (Joseph, 2015).	
			A dam structure inspection will be conducted annually by a civil specialist to check the integrity of the dam wall.	
			Hydrocarbon spill kits must be provided by the mine, placed at areas where hydrocarbons spills and most likely and clearly marked. Once spill kits have been used and/ or filled, they must be removed by the approved waste removal contractor and replaced with new spill kits.	
			Hydrocarbon spills must be cleaned immediately using supplied hydrocarbon spill clean-up kits. These spill kits must be inspected regularly to avoid running out of hydrocarbon spill kits.	
	Socio-economic.		Maintenance and repairs of vehicles must be conducted at the workshop area. Any breakdowns and repairs that cannot be done at the workshop must be done with drip trays to prevent hydrocarbons from entering the clean environment.	
			Oil traps and containment units will be constructed around the workshop area to contain oil and hydrocarbon spills. These oil containment units will be emptied by the approved waste removal company and disposed of appropriately.	
			Oil drums and fuel tanks must be stored within a bunded wall area that can contain the volume and 10% extra of the oil drums or fuel tanks stored within them. The bunded wall area will be lined so that no oil or fuel spill can escape from it into the clean environment.	
			General housekeeping will be conducted in and around the mining area to pick up litter.	
	Wetlands and surrounding landscape.		The local community can be included in major clean-up projects to spread awareness and opportunities with regards to waste management.	
			Bathrooms, showers and laundries will be inspected to ensure that they are in a good working condition and that no human waste or contaminated water affects the health of the employees, visitors or the environment. Any problems with the infrastructure must be reported immediately and repaired as soon as possible.	
Ensure that the sewage treatment plant is working correctly and effectively. A grid can be installed at the sewage plant to contain/ stop any blockages from the change houses.				
Any environmental spill or emergency must be handled in terms of the Zibulo emergency preparedness plan (Joseph, 2015).				
Rock dump (called the overburden)	Surface- and	N/A.	Clean and dirty water separation will be implemented around the rock dump. Boreholes, in the	<b>Addition:</b> These are new commitments that were

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
stockpile within the approved EMPr).	groundwater.		vicinity of the rock dump, will be monitored to determine the impact it may have on the groundwater regime.	not part of the approved EMPr and have now been added.
	Air quality.			
	Soils.		The rock dump will be revegetated to prevent dust generation and the loss of topsoil through wind and water erosion. This will also ensure that the rock dump blends in with the surrounding landscape and reduce its visual impacts.	
	Visual.		The rock dump will be revegetated.	
	Socio-economic.			
	Wetlands and surrounding landscape.		Clean and dirty water separation will be implemented around the rock dump.	
Operation of the new 28 000 L bulk diesel storage tank. This includes pumping diesel and oil, respectively through separate borehole, to the underground operations.	Soil.	N/A.	Regular inspections of the bulk diesel storage tank, boreholes, surrounding area and underground receptors to be conducted if any diesel or oil leaks are occurring.	<b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added.  Zibulo Colliery is planning to construct a new 23 000 L bulk diesel storage tank on surface (within Zibulo's mining right and on top of Anglo Americans surface rights). This new storage tank will be connected to a 10 000L underground diesel storage tank (connected via a newly drilled borehole) located within the underground workings, a 100 m below the surface. A separate borehole for the pumping of oil will also be drilled, both of the boreholes will be cased. Diesel and oil will be pumped through the respective boreholes to the underground workings. Appendix 4 indicates the location and design of the bulk diesel storage tank. The area where construction, installation and operation will take place within a heavily modified maize field and will thus result in low impacts on the surrounding environment. The storage tank is situated within a bunded box that prevents leakages into the surrounding environment. The construction of this bulk diesel tank does not trigger any new listing notices and thus no new EA application was required.
	Surface- and groundwater.		Any observed spills must be cleaned immediately and contaminated soil must be disposed of appropriately through the relevant contractor.	
	Visual aspects.		Hydrocarbon spill kits will be provided at the bulk diesel storage tank.	
	Wetland and sensitive landscape.		The area around the bulk diesel storage tank (within the fenced area) can be vegetated to prevent unnecessary soil loss and dust generation.	
			All delivery vehicles must be in a good working condition and maintenance must be conducted off-site. Emergency repairs must be conducted over drip trays and other soil coverings to prevent hydrocarbons from entering the environment.	
	Safety.		All employees/ contractors must adhere to the Zibulo Colliery waste management procedures. Waste bins/ skips will be provided at the bulk diesel storage tank.	
Informal laydown area that is used predominantly for underground vehicles that require maintenance or repairs.	Surface water.	N/A.	Clean and dirty water management infrastructure to be constructed to contain dirty water runoff.	<b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added. It must be noted that only the operational phase for the informal laydown area is considered as it is currently in the operation phase and the closure will form part of the main infrastructure closure impacts.
			Surface area to be lined to prevent any contaminants from contaminating the soil and seeping onto the groundwater.	
	Groundwater.		Hydrocarbon spills to be cleaned as soon as possible.	
			Hydrocarbon spill kits to be placed at the laydown area.	

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
	Air quality.		The water monitoring programme must include surface- and groundwater monitoring points that cover the impacts from the informal laydown area.	
Operation of the ventilation shaft (Vent fan no. 4), access roads and associated infrastructure.	Air quality.	N/A.	Restricted speed limits when using access road.	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added.</p> <p>Zibulo Colliery proposes to construct a new ventilation shaft (Ventilation shaft number 4) to increase the supply of air to the underground operations. Vent fan no. 4 will ensure that underground mining can continue into the northern areas of the mining area and provide employees with sufficient levels of air. This ventilation fan will be constructed in agricultural fields, on a surface area owned by Anglo American Inyosi Coal (Pty) Ltd, to reduce the impact on the environment.</p>
	Soil and land.		Regular maintenance and service of vehicles used for maintenance and site access.	
			The topsoil stockpile must be fenced and hydroseeded to prevent soil loss.	
			Any terraces present must be hydroseeded to avoid erosion.	
			Implementing dust suppression techniques, if required, on the access road. Access roads to be graded before the onset of the wet season.	
			Effectively cleaning of hydrocarbon spills according to the Spill Management Plan.	
	Fauna and flora.		Limit the risk of hydrocarbon spills through restricting vehicle movement to areas of need.	
			Implementing an Alien Species Eradication/ Control Plan will prevent the emergence/ control of any invasive species in the disturbed areas.	
	Surface water.		Develop a fire break management programme, if needed.	
	Noise levels.		Prevent trapping or hunting of fauna through an environmental awareness plan.	
Construct and implement stormwater management measures and infrastructure around the affected areas as per a water management plan. Separate clean and dirty surface runoff. Dirty water runoff must not be allowed to enter the clean environment.				
Visual impact.	Minimise area of disturbance to as small as practically possible.			
	Revegetate affected areas and areas that are not in use as soon as possible.			
Socio-economic impacts.	Updating and/ or implementing a water monitoring programme at Zibulo Colliery.			
	Limit visual impacts through landscaping and the use of appropriate, non-reflective infrastructure.			
<b>Decommissioning and Closure</b>				
			Socio- economic impacts can be enhanced through the retainment of employees, implementing skills development policy in line with the Social and Labour Plan and adhering to MPM's local labour procurement policies.	

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
<b>6.3.13: Sensitive Landscapes</b>				
Rehabilitation and re-establishment of the wetlands.	Wetland.	N/A.	The area must be sloped as to be free draining and ensure that the water drains to the wetland.	<b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added. These commitments are based on the wetland offset and management report (Wetland Consulting Services, 2017) and the IWUL.
	Topography.		Vehicles must be serviced as required and maintained in a good condition to limit the noise levels generated by their use and movement.	
	Fauna and flora.		No poaching/ hunting of any fauna species will be allowed. Signs must be placed on the surrounding fences to inform people hereof.	
	Surface- and groundwater.		Livestock must not be allowed into the wetland area; this can through the development of a livestock management plan.	
	Air quality		Rehabilitation must be planned for only a short period of time, preferable before the onset of the dry- and windy seasons. Dust suppression can be conducted to decrease dust generation from construction vehicles.	
	Noise.		Water monitoring will continue after rehabilitation to determine any residual impacts on the surface- and groundwater.	
	Soils.		Construction vehicles must be serviced as required (off-site or away from the rehabilitation area) and maintained in a good working condition to prevent hydrocarbons spills.	
	Land use and capability.		Any hydrocarbon spill must be cleaned immediately using an appropriate oil spill kit (which must be available on-site) and removed by an approved contractor.	
	Visual.		A pedologist must be consulted before and after rehabilitation to assist with the placement of soils as well as the testing of soils after rehabilitation for the purpose of fertiliser requirements.	
			Invasive flora and fauna species must be controlled to prevent an intrusion into the wetland. Care must be taken when removing these species as to prevent further damage (through the use of hazardous substances) to the wetland and natural fauna and flora species. An alien vegetation management programme will be developed for the closure phase.	

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
	Socio-economic.		<p>Fire management must be considered as burning a wetland must only occur every 4 to 5 years.</p> <p>Should the areas around the targeted wetlands be used for agricultural activities, agricultural use of herbicides, pesticides and fertilizers in the vicinity of the wetlands should be carefully controlled to avoid toxic effects on the flora and fauna occurring within the wetlands.</p> <p>A vegetated buffer of at least 20m is recommended between any agricultural lands and wetland areas so as to limit impacts associated with sedimentation and pollutant runoff. This should be extended to as much as 50m where steep slopes occur or where intensive cultivation is undertaken.</p> <p>Cultivation techniques must also employ measures to limit erosion and sediment loss from the cultivated fields, i.e. contour ploughing, etc.</p> <p>Locals must be educated and monitored to ensure that over harvesting does not take place as to decrease the variety of flora species.</p>	
<b>6.3.16: Waste Management</b>				
<p>The activities related to the rehabilitation and post-closure usage of the mining operation that will generate domestic and hazardous waste.</p> <p>Domestic waste includes, but is not limited to paper, cardboard, plastics, metal, polystyrene, glass, tins and food waste.</p> <p>Hazardous waste includes, but is not limited to hydrocarbons (oil and fuel), various filters removed during maintenance of vehicles, coal product, paint, thinners, contaminated water, human waste, fluorescent tubes and other globes, printer cartridges, tyres and grease.</p>	<p>Surface- and groundwater</p> <p>Soils</p> <p>Visual.</p>	N/A.	<p>Waste disposal bins and skips must be clearly marked as to indicate domestic waste and hazardous waste (Shangoni, 2020). It is important to separate waste for proper disposal.</p> <p>Zibulo Colliery will develop a waste management procedure which will address all of the waste streams on site and how waste will be handled and disposed of.</p> <p>Employees and visitors will be instructed via induction about the waste management procedures at Zibulo Colliery's underground. Other resources such as posters and shift talks can be used to inform and remind employees and visitors about the need for waste management and recycling.</p> <p>Waste disposal bins/ skips will be provided on site for waste disposal.</p> <p>A certified and respected waste company must be appointed to remove waste and provide proof that the various waste types have been disposed of properly. Domestic waste can be taken to the nearest municipal waste site whereas hazardous material must be taken to a hazardous waste disposal facility such as the Holfontein waste disposal site.</p> <p>Measures can be put into place to recycle domestic and hazardous waste. Involving the local community may provide employment or financial opportunities for poorer members of the community.</p> <p>Coal product can be suppressed with sprayers at the coal silo and conveyor area to prevent unnecessary dust generation during loading and unloading of coal product stockpiles.</p> <p>Berms, trenches and silt traps are to be constructed around the dirty areas to ensure that dirty water enters the PCD's and clean water is contained and diverted to the clean areas.</p> <p>PCD's, trenches and silt traps must be inspected regularly to ensure their integrity and effectiveness to contain contaminated water and silt (Joseph, 2015).</p> <p>A dam structure inspection will be conducted annually by a civil specialist to check the integrity of the dam wall.</p> <p>Hydrocarbon spill kits must be provided by the mine, placed at areas where hydrocarbons spills and most likely and clearly marked. Once spill kits have been used and/or filled, they must be</p>	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have now been added.</p>



Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment			
	Socio-economic.	N/A.	removed by the approved waste removal contractor and replaced with new spill kits.				
			Hydrocarbon spills must be cleaned immediately using supplied hydrocarbon spill clean-up kits. These spill kits must be inspected regularly to avoid running out of hydrocarbon spill kits.				
			Maintenance and repairs of vehicles must be conducted at the workshop area. Any breakdowns and repairs that cannot be done at the workshop must be done with drip trays to prevent hydrocarbons from entering the clean environment.				
			Oil traps and containment units will be constructed around the workshop area to contain oil and hydrocarbon spills. These oil containment units will be emptied by the approved waste removal company and disposed of appropriately.				
	Wetlands and surrounding landscape.		Oil drums and fuel tanks must be stored within a bunded wall area that can contain the volume and 10% extra of the oil drums or fuel tanks stored within them. The bunded wall area will be lined so that no oil or fuel spill can escape from it into the clean environment.				
			General housekeeping will be conducted in and around the mining area to pick up litter.				
			The local community can be included in major clean-up projects to spread awareness and opportunities with regards to waste management.				
			Bathrooms, showers and laundries will be inspected to ensure that they are in a good working condition and that no human waste or contaminated water affects the health of the employees, visitors or the environment. Any problems with the infrastructure must be reported immediately and repaired as soon as possible.				
			Ensure that the sewage treatment plant is working correctly and effectively. A grid can be installed at the sewage plant to contain/ stop any blockages from the change houses.				
			Any environmental spill or emergency must be handled in terms of the Zibulo emergency preparedness plan (Joseph, 2015).				
			Removal of the 28 000 L bulk diesel storage tank and the fences. This includes sealing of the two cased boreholes that pumped diesel and oil, respectively, to the underground operations. The area will be used as agricultural land as before construction and operation.		Soil.	Removal and rehabilitation must be conducted, as far as possible, during the dry season.	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added.</p> <p>Zibulo Colliery is planning to construct a new 23 000 L bulk diesel storage tank on surface (within Zibulo's mining right and on top of Anglo Americans surface rights). This new storage tank will be connected to a 10 000L underground diesel storage tank (connected via a newly drilled borehole) located within the underground workings, a 100 m below the surface. A separate borehole for the pumping of oil will also be drilled, both of the boreholes will be cased. Diesel and oil will be pumped through the respective boreholes to the underground workings. Appendix 4 indicates the location and design of the bulk diesel storage tank. The area where construction, installation and operation will take place within a heavily modified maize field and will thus result in low impacts on the surrounding environment. The storage tank is situated within a bunded box that</p>
					Surface- and Groundwater.	All construction vehicles must be in a good working condition and maintenance must be conducted off-site. Emergency repairs must be conducted over drip trays and other soil coverings to prevent hydrocarbons from entering the environment.	
Visual.	Hydrocarbon spill kits will be provided at the closure site.						
Air quality.	Dust suppression can be conducted to prevent unnecessary dust generation during the closure phase.						
Wetland/ Sensitive landscapes.	All employees/ contractors must adhere to the Zibulo Colliery waste management procedures. Waste bins/ skips will be provided at the closure site.						

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
	Waste generation.		The borehole casing must be removed deep enough to prevent damage to farming equipment when the land is ploughed.	prevents leakages into the surrounding environment. The construction of this bulk diesel tank does not trigger any new listing notices and thus no new EA application was required.
Removal of the ventilation shaft (Vent fan no. 4) and associated infrastructure and the sealing of the drilled boreholes.	Soil erosion.	N/A.	All structures comprising the construction site office or laydown area are to be removed from site.	<p><b>Addition:</b> These are new commitments that were not part of the approved EMPr and have been added.</p> <p>Zibulo Colliery proposes to construct a new ventilation shaft (Ventilation shaft number 4) to increase the supply of air to the underground operations. Vent fan no. 4 will ensure that underground mining can continue into the northern areas of the mining area and provide employees with sufficient levels of air. This ventilation fan will be constructed in agricultural fields, on a surface area owned by Anglo American Inyosi Coal (Pty) Ltd, to reduce the impact on the environment.</p>
	Surface-groundwater and groundwater.		The construction laydown area is to be checked for spills of substances such as oil etc, and these shall be cleaned up.	
			All hardened surfaces within the construction site laydown area must be ripped, all imported materials removed, and the area shall be levelled in line with the mine's rehabilitation requirements for the area.	
	Air quality.		Surfaces are to be checked for waste products from activities such as concreting and cleared.	
			All surfaces hardened due to construction activities are to be ripped and imported material thereon removed.	
	Fauna and flora.		All rubble is to be removed from the site to in line with the local municipality waste management procedures. Burying of rubble on site is prohibited.	
			The construction camp site is to be cleared of all litter.	
	Sensitive landscapes.		Fences, barricades and demarcations associated with the camp site are to be removed from the site unless stipulated otherwise by the PM. Any elements not removed, and to be used in operation, should be included in the mine's EMS.	
			All residual spoil and topsoil stockpiles must be used for rehabilitation as described in the Zibulo Colliery rehabilitation procedures.	
			All damaged areas shall be rehabilitated upon completion of the contract.	
<b>General</b>				
-	-	N/A.	The block plan will be update regularly or as needed to include any and all changes within the	<b>Addition:</b> This is a new commitment that was not part of the approved EMPr and have now been

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
			mining right area.	added.
Zibulo Colliery has decided to move the approved infrastructure of Ventilation Shaft No.1 to be adjacent to that of Ventilation Shaft 3. The reason for the relocation of the Ventilation Shaft No. 1 is to ensure better ventilation of the underground workings. Additional modelling was conducted and it was concluded that constructing Ventilation Shaft No. 1 at the proposed new location will ensure improved ventilation.	-	N/A.	Ventilation Shaft No. 1 and its associated infrastructure will be located on portion 6 of the farm Zondagsfontein 253 IR.	<b>Amendment:</b> This commitment has been amended to indicate the new position of Ventilation Shaft no 1.
<b>All phases of the No. 3 Ventilation Shaft EMPr (this includes all air quality aspects mentioned in all the EA's and EMPr's)</b>				
Construction and operation of the no. 3 ventilation shaft.	Air quality.	A dust monitoring programme must be implemented that effectively monitors dust related impacts from the project area.	N/A.	<b>Deletion:</b> This commitment has been removed as the impact on air quality is very low as the ventilation fan is constructed within maize fields. There are no fragile receptors within the area.
Construction and operation of the no. 3 ventilation shaft.	Air quality.	On-going ambient and PM10 monitoring must be implemented with dust monitors concentrated of the west of the site.	N/A.	<b>Deletion:</b> This commitment has been removed as the impact on air quality is very low as the ventilation fan is constructed within maize fields. There are no fragile receptors within the area.
<b>EA Amendments</b>				
<b>Scope of Authorisation</b>				
Commissioning and operation of the activity.	Section 3.10.	Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence.	Fourteen (14) days written notice must be given to the Department before the commencement of any new activity. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that any new activity will commence.	<b>Amendment:</b> This commitment has been reworded as to remove certain sections and provide a more general commitment that will cover any future construction activities.
	Section 3.17.	Once the designated areas for waste skips and the planned amounts have been finalized, the mine has to obtain a section 20 applications from the DWAF in terms of the Environmental Conservation Act (Act No. 73 of 1989).	N/A.	<b>Deletion:</b> Section 20 of the Environment Conservation Act 73 of 1989 ("ECA") was repealed with the commencement of the National Environmental Management: Waste Act 59 of 2008 ("NEMWA") with effect from 1 June 2009, i.e. prior to the granting of the EA on 8 March 2010 (Shangoni, 2019). Thus, this comment has been removed from the EA.
	Section 3.33.	Prior to the removal of the soils for stockpiling additional sampling and analysis of the soils must be undertaken, to determine their suitability for use during rehabilitation.	If soils are to be stockpiled until the rehabilitation phase, they must be sampled and analysed by a registered soil scientist to determine their suitability and possible fertiliser requirements before being used in the rehabilitation process.	<b>Amendment:</b> This commitment is vague in regards to when stockpiling will be conducted. As no long-term stockpiling is planned during the life of mine, this commitment has been reworded to focus on long-term stockpiling of soils, if any, with

Aspect	Impact	Original EMPr Commitments	Proposed New EMPr Commitments	Reason for Amendment
				regards to rehabilitation.
	Section 3.34.	Topsoil and subsoil must be sprayed with dust allaying agent immediately after being stockpiled.	If topsoil or subsoil is to be stockpiled for longer than 6 months, they must be vegetated with an indigenous grass mix to prevent a loss of soil through erosion.	<b>Amendment:</b> There are no topsoil or subsoil stockpiles at Zibulo Colliery underground. This condition has been amended, not only because of no topsoil or subsoil stockpiles, but also because the use of dust allaying agents is hazardous to the soil by affecting its quality and nutrients thereof.
	Section 3.55.	There must be a consultation and cooperation with local law enforcement agencies to ensure legal and regulatory compliance on the road.	The mine is to conduct an annual road safety campaign in collaboration with the relevant roads department. Speed- and warning signs will be placed in relation to the entrance of the mine to ensure the safe arrival and departure of all mine employees, contractors and visitors.	<b>Amendment:</b> Consultation and cooperation with local enforcement is continuously undertaken at Zibulo Colliery underground. Mine personnel further confirmed that Zibulo Colliery underground has established an annual road safety campaign in collaboration with the roads department (Shangoni, 2019). This commitment has been reworded to align with the current activities undertaken at the mine.
	Section 3.62.	During construction and operation, haulage roads must be treated with Dust-aside or a similar product to reduce water usage and dust creation.	All gravel roads are to be suppressed with water (as per the WUL) on a regular basis to reduce the creation of dust.	<b>Amendment:</b> There are no haul roads present at the underground operation. This commitment has been amended to reflect the current situation at the mine.
	Section 3.67.	The Expansion Project must link with the Integrated Development Plan (IDP) of the eMalahleni Local Municipality especially with regards to the planning processes to ensure adequate water supply and other programmes.	N/A.	<b>Deletion:</b> This commitment has been removed from the EA as no expansion project is/ or was planned.
	Section 3.73.	Construction vehicles and those transporting materials and goods must be inspected to ensure that these are in good working conditions and not overloaded not to spill any coal or product on the road.	N/A.	<b>Deletion:</b> All coal is transported via the overland conveyor belt and not by truck. Construction vehicles do not travel on the main road and will thus not spill any material on it. This commitment has been deleted from the EA.
General	Section 3.76.	Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/ or telephonic details, the applicant must notify the Department as soon as the applicant knows the new details.	Contact person: Mr Melchior Joseph.	<b>Amendment:</b> The EA still reflects Mr Henri Niewoudt as the contact person on site. This has been changed to Mr Melchior Joseph.
	-	N/A.	The block plan will be update regularly or as needed to include any and all changes within the mining right area.	<b>Addition:</b> This is a new condition that was not part of the approved EMPr and has been added.

**8.3 UNDERTAKING TO COMPLY**

I, ....., the undersigned and duly authorised thereto by **Anglo American Inyosi Coal (Pty) Limited – Zibulo Colliery: Underground** have studied and understand the contents of this document in its entirety and hereby duly undertake to adhere to the conditions as set out therein including the amendment(s) agreed to by the Regional Manager.

Signed at ..... this.....day of.....20.....

\_\_\_\_\_  
**Signature of applicant**

\_\_\_\_\_  
**Designation**

**APPROVAL**

Approved in terms of Section 39(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 29 of 2002)

Signed at..... this..... day of..... 20.....

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**REGIONAL MANAGER**

**REGION:** \_\_\_\_\_

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## 9. REFERENCES

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## 10. APPENDICES

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