



**REPORT**

**Draft EIA / EMP Report: Environmental Authorisation Application for the Proposed iMpunzi South Pit Coarse Discard Dump and Venture Co-disposal Facility Project, Mpumalanga Province**

*Glencore Operations South Africa (Pty) Ltd*

**DMRE Ref. Number: (MP) 30/5/1/1/3/2/1 (375) EM**

Submitted to:

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Department of Mineral Resources and Energy (DMRE)  
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## mineral resources

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

# **ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**And**

# **ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

**NAME OF APPLICANT:** Glencore Operations South Africa (Pty) Ltd: iMpunzi Mine Complex

**TEL NO:** 013 687 8299

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**PHYSICAL ADDRESS:** Portion 31 IS Farm Blesbokfontein District Bethal, eMalahleni Local Municipality of the larger Nkangala District Municipality

**FILE REFERENCE NUMBER: (MP) 30/5/1/1/3/2/1 (375) EM**

**SAMRAD:** N/A

## IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002, as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an environmental authorisation can be granted following the evaluation of an Environmental Impact Assessment and an environmental management programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of Section 16(3)(b) of the Environmental Impact Assessment (EIA) Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the competent authority and in terms of Section 17(1)(c) the competent authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

**It is, therefore, an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the regulation and will lead to the refusal of the environmental authorisation.

**It is furthermore an instruction that** the environmental assessment practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The environmental assessment practitioner (EAP) must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with uninterpreted information and that it unambiguously represents the interpretation of the applicant.

## OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the EIA process is to, through a consultative process -

- a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- d) determine the -
  - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - (ii) degree to which these impacts —
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources, and
    - (cc) can be avoided, managed or mitigated;
- e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- g) identify suitable measures to manage, avoid or mitigate identified impacts; and
- h) identify residual risks that need to be managed and monitored.

## PURPOSE OF THIS DOCUMENT

Glencore Operations South Africa (GOSA) proposes to develop a discard facility at the previously mined-out South Pit and develop a Co-disposal Facility at the existing Venture coarse discard dump at their iMpunzi Mine Complex on the farms Kromfontein 30 IS, and Klipplaat 14 IS respectively, located in the Magisterial District of eMalahleni in the Mpumalanga Province. A new return water dam (RWD) will be constructed as part of the development of the Venture Co-disposal Facility., and an existing haul road from the ATCOM discard dumps to the ATC Plant will be widened. The proposed activities requires the submission of an application for a Waste Management Licence (WML) and Environmental Authorisation (EA), supported by an environmental impact assessment (EIA) in terms of the 2014 EIA Regulations, as amended April 2017, to the competent authority, the Department of Mineral Resources and Energy (DMRE).

Golder Associates Africa (Pty) Ltd (GAA), an independent environmental assessment practitioner, has been appointed by GOSA to conduct the EIA and associated authorisation processes.

The first phase of an EIA is the Scoping Phase, during which interested and affected parties (I&APs) are given the opportunity to comment on the proposed activities and the proposed scope of the EIA specialist studies. The Draft Scoping Report (DSR) was made available for public comment from 8 November 2019 until 9 December 2019. Comments received from I&APs thus far have been recorded in a Comment and Response Report (CRR) (see APPENDIX G). The Final Scoping (FSR) report was submitted to the DMRE on 8 January 2020. The acceptance of the Final Scoping report was received from DMRE on 01 July 2020.

This Draft EIA and Environmental Management Programme Report (EMPr), which describe the environmental impacts of the proposed development and how they will be managed and mitigated, is presented to registered I&APs so that they may comment on and/or raise issues of concern regarding the proposed project. The due date for comment on the Draft EIA/EMPr report is **2 October 2020**. Comments received during the public review period will be acknowledged and recorded in the final version of the EIA/EMP report, which will be submitted to the DMRE for decision making.

### Summary of what the Environmental Impact Assessment report contains

This report contains:

- A description of the proposed expansion activities;
- An overview of the EIA process, including public participation;
- A description of the existing environment in the proposed project area;
- The assessed environmental impacts and recommended mitigation measures;
- A draft environmental management programme; and
- A list of interested and affected parties involved during the EIA process and their comments.

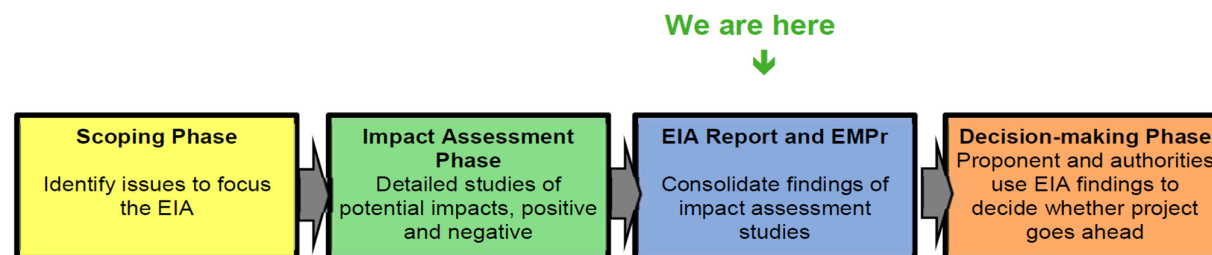


Figure 1: Various phases of an Environmental Impact Assessment (EIA) Process

## PUBLIC REVIEW OF THE DRAFT EIA/EMP<sub>r</sub> REPORT

The Draft EIA/EMP Report is available for comment for a period of **30 days** from **1 September 2020** until **2 October 2020**. See Section 5.5 for the details of the Public Participation process followed during the Impact Assessment (IA) phase (this phase of the project).

## OPPORTUNITIES FOR PUBLIC REVIEW

Stakeholders who wish to comment on the Draft EIA/EMP Report may do so in any of the following ways:

- Completing the comment sheet enclosed with this report or on-line via the Golder website ([www.golder.com/public](http://www.golder.com/public));
- Additional written submissions; and
- Comment by e-mail or telephone.

## DUE DATE FOR COMMENT ON THIS EIA/EMP REPORT IS 2 October 2020

Please submit comments to the Public Participation Office:

Mabel Qinisile / Brian Magongo  
Golder Associates Africa (Pty) Ltd  
P. O. Box 6001  
HALFWAY HOUSE, 1685  
Tel: (011) 254 4805 / 4937  
Fax: 086 582 1561  
Email: [ppoffice@golder.co.za](mailto:ppoffice@golder.co.za)

## Executive Summary

Glencore Operations South Africa's (GOSA) iMpunzi Mine Complex is located 27 km south-east of eMalahleni in the Mpumalanga Province, near the towns of Ogies and Kriel. The complex consists of four (4) sections, namely: Arthur Taylor Colliery (ATC), Phoenix (decommissioned), Arthur Taylor Colliery Opencast Mine (ATCOM), and ATCOM East.

GOSA has appointed Golder Associates Africa (Pty) Ltd (Golder) as an independent environmental assessment practitioner (EAP) to undertake the regulatory application process for the proposed development of a discard facility at the South Pit, develop a Co-disposal Facility at the existing Venture coarse discard dump, and the widening of the existing haul road from the ATCOM discard dumps to the ATC Coal Processing Plant, all located at their iMpunzi Mine Complex.

### Project description

#### a) Proposed Venture Co-disposal Facility and Return Water Dam:

The existing Venture coarse discard dump footprint will be expanded, and the facility will be modified into a Co-disposal Facility to accommodate both coarse and fine (slurry) discard. The fine discard (slurry), currently disposed of underground, will be piped from the ATC Plant to the facility via pipeline. The current Pollution Control Dam (PCD) located here lies within the planned footprint of the new Co-disposal Facility. This PCD will be decommissioned and removed prior to the start of construction of the Co-disposal Facility, to be replaced by a new RWD. The new RWD will be constructed to the north of the Co-disposal Facility footprint, adjacent to the north-western corner of the planned footprint. This new RWD will serve to collect and store contaminated water from the surface water management channels to be constructed around the Co-disposal Facility as well as decant water pumped from the basin area of the facility (Golder Associates Africa (Pty) Ltd (r), February 2020).

The facility will have a lifespan of approximately nine years (in line with the remaining LoM of the ATC section and discard dump reprocessing project) and will store totals of 2.16 Mm<sup>3</sup> of coal fines material and 5.81 Mm<sup>3</sup> of coarse coal discards. The coarse discard will continue to be transported via conveyor belts to the facility from the ATC Plant. Constructed will be phased to allow for accommodation of the full volumes of both coal fines and coarse discard material, at the planned rate of production. There are five main development phases, the starter embankment walls will be constructed with coarse discard material, and deposition of fines will commence when the starter wall reaches a sufficient height to retain the fine material (1 533 mamsl). The facility will then be developed to extend to the south and then to the east.

#### b) Proposed South Pit Discard Dump:

The proposed South Pit Discard Dump will receive coarse discard from the Phoenix Plant. The South Pit is a previously mined-out area and has been partially rehabilitated. The proposed South Pit Discard Dump will accommodate approximately 29 Mm<sup>3</sup> of coarse discard. The maximum height of the dump will not exceed 30 m from the immediate surrounding ground elevations. The facility will be developed in a phased construction approach (Phases 1 to 3) to minimise the need for clean and dirty water separation measures as well as to allow for the timeous construction of blanket layers on hot areas.

All coals in contact with the atmosphere sooner or later show signs of oxidation and weathering, with resultant decreases in calorific content, volatile matter, and swelling capacities. The oxidation of coal is a strongly exothermic reaction. Thus, if the heat produced is not dissipated by a flow of air or by the conductive properties of the coal, it increases rapidly, finally reaching the temperature at which the coal ignites and burns, and creating a 'hot spot' in the seam or stockpile (Falcon, July 1986).

The Proposed South Pit Discard Dump should reach full capacity in 2035.

c) Haul road expansion:

GOSA plans to reprocess some of the ATCOM discard dumps. In order to enable the transportation of the discard from the dumps to the ATC Plant (via Articulated Dump Trucks (ADTs)), the existing haul road needs to be widened to a maximum of 16 m to accommodate the ADTs to transport the coarse discard to the ATC beneficiation plant. The expansion will also include the upgrading on an existing wetland crossing.

### **Environmental Impact Assessment and Public Participation Process**

#### Announcement of the project

The proposed project and availability of the Draft Scoping Report (DSR) were announced on **Friday, 08 November 2019** and the due date for public comment was **Monday, 09 December 2019**. Stakeholders were invited to participate in the EIA process and associated public participation process and to pass on the information to friends, colleagues, and neighbours who might be interested, and to register as an interested and affected parties (I&APs).

The proposed project was announced as follows:

- Distribution of an announcement letter, locality map and registration and comment sheet to all identified I&APs with email and postal address. A bulk SMS was sent to identified I&APs with mobile phone numbers;
- The abovementioned documents were made available at the public places and posted to the Golder website;
- A mandatory advertisement was published in the local newspaper, the Middelburg Observer, on **Friday 08 November 2019**; and
- Site notices were placed along the access road to the Glencore (iMpunzi South Pit) operations.

#### Draft scoping report

The draft scoping report was made available for public review for a period of 30 days from **Friday 08 November to Monday 09 December 2019**.

#### Final scoping report

The DSR was updated and reflected the comments received from I&APs. The Final Scoping Report was submitted to the DMRE, on **8 January 2020**, for consideration on whether the Environmental Assessment Practitioner may proceed with the impact assessment phase. Subsequent acceptance of the EA application was received from DMRE on 1 July 2020.

#### Issues raised by I&APs

The comments received during the 30-day comment period, both in writing and telephonically, were captured in a Comment and Response Report (CRR) (see APPENDIX G). The Comment and Response Report will be updated throughout the environmental authorisation process.

#### Public participation process during the impact assessment phase

This phase will entail a review of the findings of the EIA, that will be presented in the EIA Report and Environmental Management Programme (EMPr), and the volume of specialist studies. These reports will be made available to all registered Interested and Affected Parties (I&APs) and key stakeholders for a period of 30 days from **Tuesday, 01 September 2020** until **Friday, 02 October 2020**.

The availability of the Draft EIA/EMP report for public comment will be announced as follows:

- Registered I&APs will receive a letter notifying them of the commencement of the impact assessment phase and an invitation to contribute comments, questions, or suggestions for enhanced benefits on the findings of the specialist studies and EMPr. In view of the COVID-19 restrictions and to protect the safety of stakeholders, Golder will distribute the letter by email, and a short notice via bulk SMS;
- The report, executive summary and its appendices will be available on Golder's website;
- The executive summary of the report also will be available as a separate document for those I&APs who do not have the time nor data to download the entire report. The executive summary will accompany the letter to be electronically distributed; and
- Detailed A3 notices regarding the proposed project (not copies of the actual documents) will be erected at publicly accessible places for potential I&APs to familiarize themselves with the project details.

After completion of the 30-day public comment period, all the issues, comments and suggestions raised on the Draft EIA/EMPPr will be added to the Comment and Response Report that will accompany the Final EIA/EMPPr. The Final EIA/EMPPr will be submitted to the DMRE for decision making.

On submission of the Final EIA/EMPPr to the DMRE, a personal letter will be sent to registered I&APs to notify them of the submission and the opportunity to download an electronic copy of the Final EIA/EMPPr from the Golder website. The letter will be sent via email and a notification by bulk SMS.

#### Announcement of lead authority's decision

Once the Mpumalanga DMRE has taken a decision about the proposed project, the Public Participation Office will immediately notify I&APs of the decision and opportunity to appeal. This notification will be provided by distributing a letter, accompanied by a copy of the authority's decision, to all registered I&APs. The letter will provide guidance to I&APs on how to lodge an appeal should they wish to.

An advertisement to announce the Lead Authority's decision will be published in the Middleburg Observer newspaper, if so, required by the authorities.

### **Summary of key findings of the environmental impact assessment**

The following potential impacts were identified and assessed:

#### **Air quality**

The project area is located within close proximity of several opencast coal mines and coal-fired power plants, region, thus the ambient particulate matter is already elevated and even small contributions to these can have a detrimental cumulative impact on the receiving environment. Dust emissions are expected as part of the footprint preparations for the proposed activities, due to entrainment of dust particles by the movement and operation of the construction equipment, which may also potentially lead to increased greenhouse gas releases. The area has numerous mines that contributes to air quality deterioration and the risk assessment was based on the fact the air is already exposed to polluting sources. The significance of the impact is anticipated to be Moderate and by implementing mitigation measures such as dust suppression and keeping the cleared footprint to a minimum will reduce the impact significance to Low.

During the operational phase, increased dust emissions can be expected as discard is being transported to the discard facilities and disposed of onto the dumps. The significance of the dust emissions resulting from the transport of the discard and the placement of the discard onto the discard dump is Moderate but can be reduced to Low by implementing the recommended mitigation measures. The possibility of combustion emissions associated with spontaneous combustion were not quantitatively assessed as no suitable site-specific emission factors for the mine are available. However, spontaneous combustion is possible and was identified as a



potential risk with a significance of Moderate and after implementation of mitigation measures the significance remains Moderate. The recommended mitigation measures include compaction of discard to create anoxic conditions which could reduce the probability of spontaneous combustion, and implementation of concurrent rehabilitation.

During decommissioning, dust and fine particulate emissions associated with shaping the final dumps prior to revegetation is anticipated. These impacts are anticipated to be restricted to the site and will cease once the activity ceases. It is anticipated that the significance of the unmitigated impact is Moderate and if the recommended mitigation measures are implemented the significance of the impact is Low.

### Groundwater

Seepage from the fine (slurry) and coarse discard is considered to have a High magnitude because of the acid-generating nature of the discard and the elevated concentrations of calcium, aluminium and sulphate in the leachate. The impact is regional due to close proximity to rivers and is long term due to the normal duration of acid-generation of Highveld coal discards, although future kinetic testing of iMpunzi discard could determine the likely duration more accurately. This results in a High significance without mitigation.

Abstraction boreholes in the historic Venture and ATCOM South Pits would need to be installed during the development of the discard facilities to keep water levels within pit level and therefore preventing decant during operations and post-closure. This will reduce the environmental impact of mine affected water (to Moderate) and protect future uses of water resources in the area by preventing decant to surface water systems during the polluting period of the source, and address water use efficiency requirements as the mine-affected water is abstracted for treatment and reuse, rather than leaving it as wasted dirty water.

The following additional mitigation measures are recommended:

- Developing and implementing a standard operating procedure to correctly load vehicles to prevent overloading and associated spillages;
- Regular maintenance of vehicles and the usage of drip trays;
- Implement a minimum 300 mm cover on the discard dump to decrease recharge into the groundwater resource;
- Instillation of interceptor boreholes downgradient of facilities to capture the contaminant plume from reaching river channels (Steenkoolspruit);
- Continuous abstraction of contaminated pit water to prevent decant;
- Boreholes downgradient of backfilled or rehabilitated pits should be monitored for rising water levels, and potential decant of these pits;
- Groundwater levels should continue to be monitored monthly. Should it be identified that groundwater dependent/private users within the vicinity are impacted, it may be necessary to conduct a water supply options analysis and develop a supply strategy to meet the deficits;
- Implement concurrent rehabilitation as far as practically possible;
- Kinetic testing of the discard dump and fine discard material should be done to confirm predicted post closure groundwater quality; and
- Additional assessment should be conducted to confirm that the additional contaminant load from the discard facilities can be accommodated at the existing Tweefontein water treatment plant (WTP).

During decommissioning, seepage from the coarse discard and dried fine discard at the South Pit Discard Dump and the Venture Co-disposal Facility is anticipated to have an impact on the groundwater with a High significance and with the implementation of mitigation measures it can be reduced to a significance of Moderate. The reduction in baseflow to the Steenkoolspruit and the Saaiwaterspruit is another anticipated impact associated with the abstraction of water from the pits not only during the operational phase but during the closure phase and the risk significance is estimated to be Moderate and with mitigation measures it reduces to Low. The following mitigation measures are recommended:

- Implement a min. 300mm cover on the discard dumps to decrease recharge into the groundwater resource; and
- Continuously abstract contaminated pit water to prevent decant, in line with the minimum required as to not result in decreased baseflow.

### Surface water

During the construction phase it is anticipated that the site preparation associated with the construction phase will lead to increased sediment loads reporting to the surface water resources. The identified impact has a Low significance if not mitigated and if the recommended mitigation measures, such as implementation of drainage control berms to limit erosion and sedimentation, are implemented it can be reduced further.

Numerous impacts have been identified during the operational phase of the proposed project. The unmitigated impacts with Low significance include increased sedimentation and potential contaminated runoff reporting to the receiving environment, as well as potential discharge from the dirty water sump into the receiving environment. Impacts with Moderate significance were also identified and relates to hydrocarbon spills during the transportation of the discard, inadequate clean and dirty water separation and increased seepage and higher decant volumes that could lead to the contamination of the surface water resources. If the following mitigation measures are implemented the significance of the impacts can be reduced to Low:

- Protect spoils area from erosion by utilising applicable erosion procedures;
- Ensure adequate compaction of discard material and concurrent rehabilitation as far as practically possible;
- Clean up spillages immediately and dispose of contaminated materials at permitted waste sites;
- Ensure regular maintenance of the diversion channels. Channels that have been eroded during storms should be maintained, including excavation of sediments, reinstatement of channels, removal of washed down vegetation and litter;
- Provide erosion protection for the clean water conveyance trench;
- Erosion protection in the form of scour aprons with energy dissipation must be implemented at the discharge points of each channel and scour aprons with stilling basins are required at the outlet of pipe chutes;
- Disturbed areas should be revegetated as quickly as possible to limit erosion and sedimentation in downstream water resources;
- Implement the required min. 300mm cover design option to ensure optimal recharge rates;
- Ensure adequate overburden and topsoil material as required to meet the optimal capping make-up to limit seepage to groundwater resources;
- Comply to rehabilitation and closure plan;
- Utilising applicable erosion procedures;

- Ensure adequate compaction of discard material and ensure that concurrent rehabilitation takes place;
- Design storm water management facilities for the discard facility is to comply with regulation GN 704 so that clean water is diverted away from the mining operations to the water resources;
- Revegetate placed cover material as quickly as possible;
- Manage the use of earth moving machinery in accordance with the mine's standard operating procedures;
- Develop the discard facilities in accordance with the design slopes; and
- Implement corrective measures identified in ongoing rehabilitation performance monitoring and assessment.

Decant of Acid Mine Drainage (AMD) reporting to the surface resources and increased erosion and the mobilisation of sediments have both been identified as impacts with a High unmitigated significance and can be reduced to Low if the recommended mitigation measures are implemented. The imprecise predicted quantification of the post closure decant volumes can lead to ineffective water treatment which has an unmitigated significance of Moderate and a mitigated significance of Low.

Inadequate storm water control measures during decommissioning can result in the restriction of runoff emanating from clean areas to report to the receiving environment and can be reduced from Moderate to Low if the recommended mitigation measures are implemented. Inadequate financial provision for long term water treatment and has a Moderate significance and the uncertainty of the treatment method prior to regulatory approval has a High significance and can be reduced to Low respectively, if the following mitigation measures are implemented:

- Ensure adequate overburden and topsoil material as required to meet the optimal capping make-up to limit seepage to groundwater resources;
- Implementation of water management options to pump and treat water to the required specifications to achieve desired discharge water qualities as per the recommendation made in Section 9.3.3;
- Finalise the integrated water balance for the entire iMpunzi MRA to determine excess water required to be managed;
- Continue with level measurements and metering in order to improve calibration of models;
- Monitor the performance of the treatment plant on an ongoing basis. Maintenance activities to be scheduled during dry seasons;
- Conduct ongoing rehabilitation performance monitoring and assessment;
- Implement the optimal cover design option and depth to ensure lower recharge rates are achieved;
- Ensure that the storm water controls are in compliance with GN704 or the necessary GN 704 exemption has been applied for, and that clean water is separated enabling runoff into catchment;
- A monitoring programme should be implemented to regularly monitor water quality or more frequently during the rainy season to get an understanding of the potential contaminants of concern and adequacy of control measures;
- The required treatment for the quality and quantity of water should be clearly investigated. Adequate provisions of funding must be set aside to ensure the correct treatment option is implemented.

## Biodiversity

### *Discard facilities*

Considering the transformed nature of the footprints of the proposed discard facilities, it is considered highly unlikely that the proposed project will contribute to any existing impacts on terrestrial ecology as the facilities will be placed on historic mined-out pits. No wetlands were found to occur within the direct footprint of the proposed South Pit study area. The existing Venture coarse discard dump, as well as the footprint of the proposed expansion, will be located on rehabilitated mining land, with mining of the area having been completed before 2003. However, several wetland features, called “rehab wet areas”, were found to occur within the expansion footprint, while a number of natural wetland systems occur within the 500m buffer around the proposed expansion footprint. The “rehab wet areas” can be considered man-made or artificial wetlands in the sense that they have reformed on rehabilitated mining land, and the largest of which currently receives overflow from the existing PCD, which will be decommissioned during this project.

The construction and site preparation phase of the proposed Venture Co-disposal Facility footprint extension and the expansion of the haul road can lead to loss and disturbance of artificial wetland habitat, which formed as a result of rehabilitation in wet areas. By implementing the mitigation measures the significance of the impact can be reduced from Moderate, to a less Moderate rating. During the construction phase increased turbidity and deterioration in terms of quality of the wetlands adjacent to the Venture Co-disposal Facility extension can be expected. Increased sedimentation due to sediment rich runoff from the construction / preparation site to the adjacent wetlands as a result of site clearance, will have result in a Moderate environmental impact and can be reduced to Low, by implementing appropriate storm water management related mitigation measures.

Key focus should be on mitigating the impact of water quality deterioration which was identified as the impact of highest significance from a wetland perspective. Decreased flows within adjacent wetlands due to catchment exclusion as a consequence of the storm water management infrastructure associated with the dumps has been identified as an impact with a Moderate significance.

It is expected that seepage from the discard facilities will enter the underlying rehabilitated opencast pits and if the pits are allowed to fill with water and decant, the acidic seepage will enter the Tweefonteinspruit (Venture Co-disposal Facility) or Steenkoolspruit (South Pit Discard Dump), resulting in a High impact on the receiving wetlands. Should the mitigation measures related to groundwater and surface water be implemented, impacts on wetland should be reduced to Moderate.

During decommissioning of the proposed discard facilities, the sediment movement into wetlands, emanating from the rehabilitation practices which involves cover establishment on the side slopes, has a Moderate significance and by implementing the recommended mitigation measures the significance can be reduced to Low.

### *Haul road expansion*

Currently, an unchanneled valley bottom wetland system with adjacent hillslope seepages occurs within the haul road expansion route. Previous mining and rehabilitation activities have caused significant habitat disturbance and fragmentation of the landscape surrounding the proposed road expansion route. Thus, it is expected that the faunal abundance and diversity in the area is low. During the construction phase of the haul road expansion, the disturbance of vegetation may also result in other/secondary impacts, such as soil erosion and the establishment of alien invasive plants. Implementation of the following mitigation measures are recommended:

- As far as practical, vehicle access tracks and lay-down areas should be located in already disturbed areas. Where this is not possible, the disturbance footprints should also be kept to a minimum;

- The approved area for construction should be demarcated to prevent construction vehicles entering areas of the wetland that will not be affected by the proposed road expansion, enabling construction contractors to avoid these areas; and
- Construction activities should be undertaken during the dry season insofar as possible.

During operation, the hardened surfaces associated with the compaction of soil will result in surface runoff and decreased infiltration into soils. This could result in decreased interflow recharge and decreased flow into the wetlands, while increased surface runoff could result in erosion of the adjacent wetlands. The significance of this impact can be reduced from Moderate to Low, by implementing the below recommended mitigation measures:

- Driving within the wetland areas should be kept to an absolute minimum. Clearly defined access routes should be used only; and
- Appropriately engineered designs for the wetland crossing must be implemented to ensure that diffused flow regime is maintained upstream and downstream of the road crossing, and no impoundment upstream or erosion downstream of the road occurs.

## Visual

The expected visual impacts from the proposed discard facilities and expanded haul road may contribute to the negative effect of existing mine infrastructure and facilities on the general visual aesthetics of the local area. Over time, various infrastructure and facilities associated with the GOSA operations and adjacent mines will be removed during decommissioning, closure and rehabilitation of these operations. There will however be a permanent visual impact on the landscape, as the discard facilities will remain post-closure, although they will be shaped, rehabilitated and revegetated.

The potential movement of earth moving vehicles and personnel along the local roads and construction activities on the site could be visible to local residents. The significance of the visual impact might increase if the activities give rise to visible dust plumes. The visual impact during site preparation and construction has a Moderate significance. Implementation of mitigation measures such as dust suppression and planting indigenous trees along the perimeter embankment of the Venture discard dump should reduce the impact to a Low significance.

The significance of the visibility of the discard facilities, especially the Venture Co-disposal Facility expansion and increase in height during operational phase is Moderate and will reduce slightly with the implementation of the recommended mitigation measures. Dust plumes are often one of the more socially objectionable impacts associated with the disposal of discard onto the dumps, due to the associated potential health risks, nuisance factor and degradation of the visual comfort value of the surrounding landscape. The significance of the dust impacts can be reduced from Moderate to Low by implementing mitigation measures such as dust suppression and implementing concurrent rehabilitation to reduce the visual impact of the bare side slopes of the dumps.

The only identified impact during the decommissioning and closure phase is the presence of the discard facilities, especially the Venture Co-disposal Facility which is situated close to a local road. At final closure, the discard facilities will remain in place, but it will be shaped and revegetated.

## Noise

The existing mining operations associated with iMpunzi and surrounding mines have long impacted on the ambient noise levels of the area. These include, but are not limited to, opencast mining activities and the coal processing facilities in the area. No residential areas are situated close to the project sites, and the impacts were assessed in terms of the noise impacts on site and along the local roads.

During the site preparation and construction phase it is anticipated that the use of heavy machinery, the hauling of topsoil away from the footprint area and hauling of haul road material will have a Low impact on the current

noise levels in the vicinity of the mine and if mitigated, the impact will reduce further. The following mitigation measures are recommended:

- The most appropriate equipment should be used for the particular purpose of site clearance and construction;
- The haul road must be levelled and compacted on a regular basis to reduce friction on the road leading to noise arising from the road / tyre interaction;
- All vehicles and other equipment should be maintained and serviced regularly to ensure that the noise levels are reduced; and
- Vehicles should not be allowed to idle when not in use.

During the operational phase the same impacts have been identified as with the construction phase. The significance of the elevated noise levels associated with the hauling and placement of discard materials on the dumps has been identified as Low and with the implementation of the recommended mitigation measures, it can be reduced further.

During the replacement of topsoil and seeding, associated with the rehabilitation phase it is anticipated that the use of heavy machinery and the hauling of topsoil will have a Low impact on the current noise levels in the vicinity of the discard facilities and by implementing mitigation measures similar to those recommended to be implemented during construction and operations, the impact will reduce further.

### Socio-economic

The proposed activities will not create any new jobs nor require extraordinary expenditure on local goods and services, but it would prolong the life of the iMpunzi mining operations, which would result in a positive impact of Moderate significance. Communities in the receiving environment are exposed to high rates of unemployment and generally do not have access to adequate social services and infrastructure. During the initial site preparation and construction phase, some temporary employment opportunities will arise for general workers and the positive impact can be increased if the following measures are implemented:

- General workers should be sourced locally as far as possible as they will be the most affected by the proposed project;
- A local skills database must be developed and updated regularly. The skills database should be used for recruitment purposes; and
- A monitoring system should be put in place to ensure that iMpunzi's recruitment policy is adhered to.

During the operational phase, impacts relating to the loss of employment for contractors after construction phase and prolonged job security for the current employees were identified. The expansion of the dumps and associated activities will ensure that iMpunzi remains operational and consequently, this will ensure local economic growth and the transfer of technical skills.

### Opinion on whether the activity should be authorised

It is expected that the proposed discard facility establishment at South Pit, modification of the current Venture Co-disposal Facility, and haul road expansion project will not result in any environmental impacts that cannot be mitigated to acceptable levels, provided that all the environmental management measures described in the environmental management programme report (EMPr) and recommended conditions that must be included in the authorisation are applied diligently.

By not granting this authorisation, the benefits (i.e. continued production and job security) of the project to GOSA (iMpunzi), as well as local residents will not be realised. Therefore, it is the opinion of the environmental assessment practitioner (EAP) that the application for Environmental Authorisation (EA), and Waste Management Licence (WML) be granted, to enable GOSA to undertake the activities described in this EIA/EMPr.

## Conditions that Must be included in the environmental authorisation

### General conditions

- Implement all aspects of the EMPr in sections Part B of this document;
- Comply with all relevant legislation at all times;
- Undertake annual internal auditing of environmental performance and annual reporting to the DMRE; and
- Undertake biennial external auditing of environmental performance and provide the DMRE with a copy of the audit report.

### Design conditions - South Pit Discard Dump

GOSA – iMpunzi must:

- Undertake detailed design of the South Pit Discard Dump;
- Update the conceptual landform designs for the overall ATCOM mining areas;
- Undertake detailed design and efficacy studies of the final dump cover thickness, as the 300 mm thick soil cover was determined for managing infiltration for pollution control (decreasing mass loads to the groundwater system) and water use efficiency (decreasing the volume of dirty water generated). Additional soil might be required for a growth medium, depending upon the final determined land use;
- Investigate the use of the proposed borehole as drainage conduit to a suitable level of detail;
- Include differential settlement and low wall stability analysis in the next design phase;
- Apply a 1m blanket layer as a cooling mechanism prior to the placement of discard on hot areas; and
- Conduct hydrological modelling to determine how run-off from the upper surface of the facility can best be drained with a dedicated engineered channel on the western side.

### Design conditions - Venture Co-disposal Facility

GOSA – iMpunzi must:

- Conduct hydrological modelling to determine how runoff from the upper surface of the Venture Co-disposal Facility and the South Pit Discard Dump can best be drained with a dedicated engineered channel on the western side; and
- Undertake detailed design and efficacy studies of the final dump cover thickness, as the 300 mm thick soil cover was determined for managing infiltration for pollution control (decreasing mass loads to the groundwater system) and water use efficiency (decreasing the volume of dirty water generated). Additional soil might be required for a growth medium, depending upon the final determined land use.

- Conduct additional geotechnical investigations to update the stability analysis and to complete the design of the facility (e.g. founding conditions for structures, embankment construction, etc) and must include:
- Foundation assessment of the material used to backfill the historic Venture opencast pit. This must include *in-situ* investigations and laboratory testing of sampled materials to conceptualize the type and condition of the backfill material; and
- Laboratory testing of the discard material.
- Install a barge pump (with a maximum pumping capacity of 250 m<sup>3</sup>/day) to route runoff and operational slurry return water from the slurry pool to the perimeter channels; the channels must route the water to the new RWD; and
- A new RWD with minimum capacity of 56 000 m<sup>3</sup> must be constructed to receive runoff from the discard dump side slopes as well as the slurry return water and runoff from the dump top (embankment crest, dry beach, wet beach and slurry pool) must be routed through the barge pump system and diverted to the new RWD through the trapezoidal stormwater channel.

### Site Specific conditions

- Conduct kinetic testing of the discard dump and fine discard material to confirm predicted post closure groundwater quality;
- Conduct the following assessments relating to the existing Tweefontein WTP (design):
  - Develop a predicted 95th percentile concentration scenario, to indicate potential variability in feed concentrations to even higher levels than currently indicated in the average scenarios (as completed in the Groundwater impact assessment report APPENDIX K);
  - Run reverse osmosis (RO) simulations to ascertain the impact of the higher ionic concentrations in the feed on the % water recovery that can be achieved. Some components associated with scale formation, e.g. Calcium still seems to be within range, but the overall TDS increase impact on recovery needs to be quantified;
  - Since the treatment plant was designed for modular expansion, some expansions may need to be assessed; and
  - Verify revised flow rates from Glencore Goedgevonden and Tweefontein to the treatment plant to confirm that treatment capacity is not exceeded.
- Compile a site-wide topsoil balance for all areas of the iMpunzi complex and related mine residue facilities indicating the topsoil volume (and quality) requirements for rehabilitation and closure, topsoil volumes available and their location (in-situ ahead of mining and stockpiled) and the shortfall or surplus;
- Identify and quantify potential topsoil sources to address any shortfalls;
- Update the proposed land preparation, soil amelioration and hydroseeding rates based on site specific soil sampling and analysis;
- Incorporate the Venture Co-disposal Facility and the South Pit Discard Dump into the mine wide closure planning and costing to ensure the alignment of end land use planning and closure objectives;



- Investigate and implement alternative water management solution to manage potential decant if dewatering boreholes are deemed to be ineffective to manage potential decant;
- Continue investigations in support of the development of the post-closure water management strategy for the mine;
- Take appropriate remedial actions if deviations from expected environmental performance occurs; and
- Amend the EMPr as and when necessary to maintain acceptable environmental performance.