GOLDER

Report

Visual Impact Assessment for the proposed Zibulo Colliery Discard Facility

Anglo American Inyosi Coal (Pty) Ltd

Submitted to:

Anglo American Inyosi Coal (Pty) Ltd
Supply Chain
Ground floor security
55 Marshall Street
Johannesburg

Submitted by:

Golder Associates Africa (Pty) Ltd.
Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City,Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand, 1685, South Africa
P.O. Box 6001, Halfway House, 1685

+27 11 254 4800

19117180-336651-8

November 2020

Distribution List

1 x electronic copy to Anglo American Inyosi Coal (Pty) Ltd

1 x electronic copy to e-projects library projectreports@golder.co.za

1 x electronic copy to SharePoint Site

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

Golder Associates (Golder) was appointed by Anglo American Inyosi Coal (AAIC) to conduct a visual impact assessment for the proposed discard dump of Zibulo Colliery, located adjacent to Ogies in the Mpumalanga Province of South Africa.

The visual impact assessment (VIA) forms part of the larger Environmental Impact Assessment. This report presents:

- A visual baseline description of the study area and surrounding landscape; and
- An impact assessment for proposed project activities, with recommended mitigation measures.

1.1 Location of the Project Site

The proposed discard dump is located inside the Zibulo opencast operations, immediately northwest of Ogies, in Mpumalanga Province –see Figure 1. The N12 highway is north of the discard dump while the R545 arterial road borders the western boundary of the discard dump and the opencast operations.

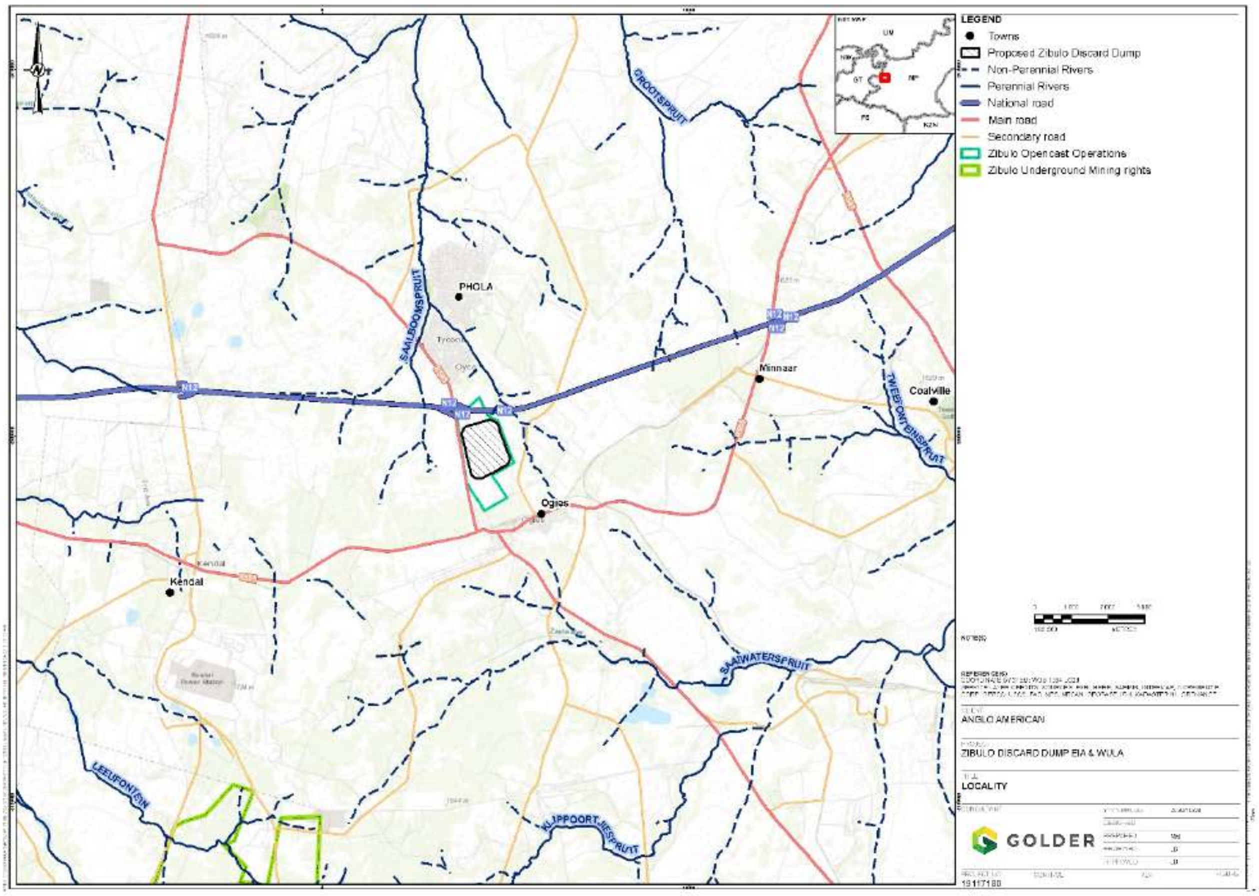


Figure 1: Regional location of the Zibulo opencast operations

2.0 DELINEATION OF THE VISUAL STUDY AREA

The study area for the VIA comprises the spatial extent of the project footprint and related activities, as well as an associated buffer area.

A visual impact will be caused by all visible infrastructural components and activities that will take place as part of the project, as well as all areas where the physical appearance of the landscape will be altered by earthworks and construction activities. The areas from which these proposed landscape alterations are expected to be visible are therefore defined as the study area.

As per Golder's standard methodology developed for VIAs, the study area was defined as a 10 km radius around the physical footprint of the discard footprint.

- For the purposes of this VIA, the term 'project site' or 'site' refers to proposed discard expansion footprint– shown in Figure 2; and
- The term "study area" refers to the area that will potentially be visually affected by the project and represents the 10 km radius buffer around the expansion footprint (shown in Figure 2).

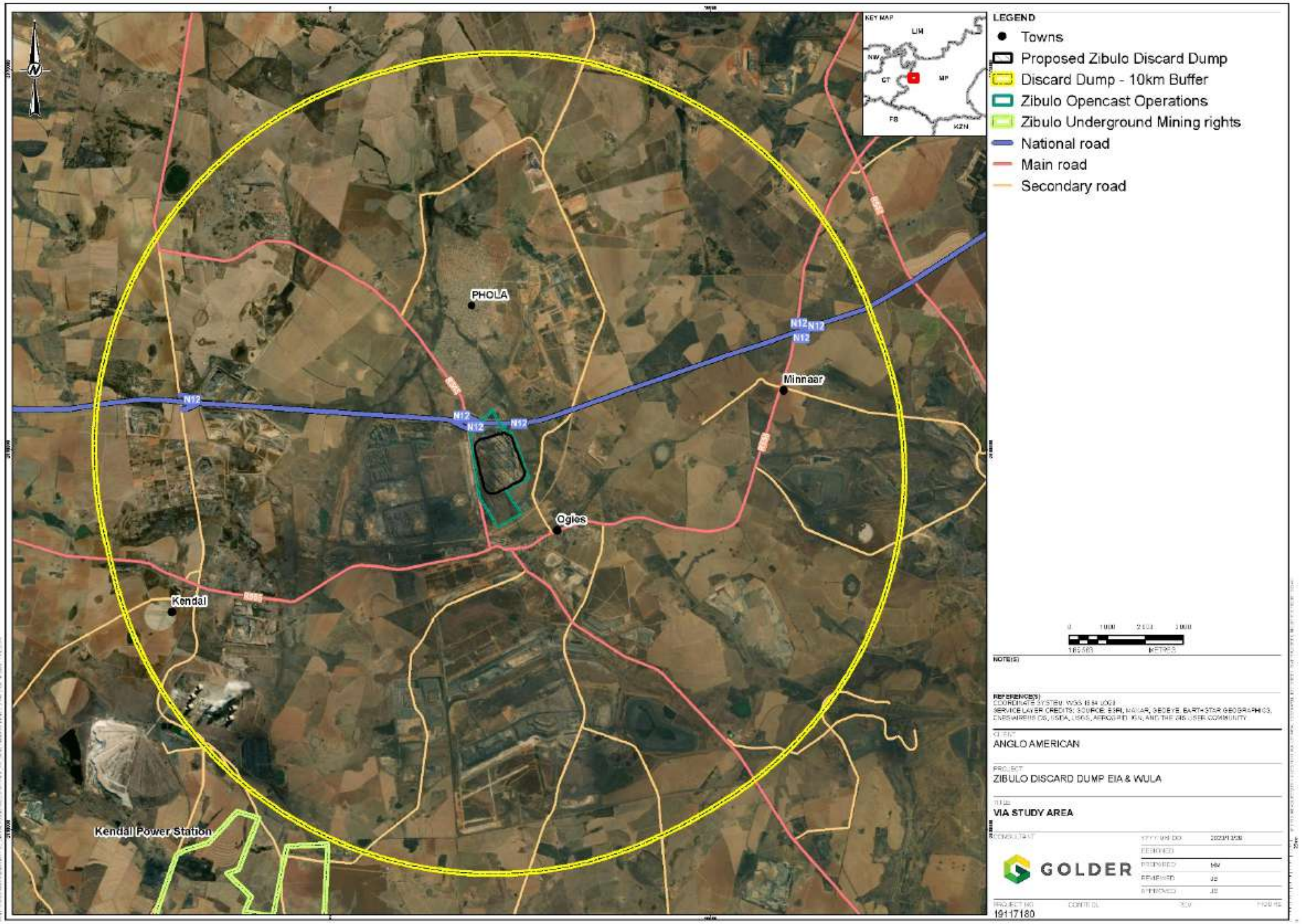


Figure 2: The study area (10 km buffer around the Project site) for the Zibulo visual impact assessment

3.0 STUDY METHODOLOGY

The VIA specialist study was conducted using the following methodology:

- Describing the landscape character or visual baseline based on:
  - A review of available aerial imagery and topographical maps, as well as previous studies, focusing on the both natural- and human-made elements.
- Determining the visual resource value of the landscape based on:
  - The topographical character of the study area and potential occurrence of landform features of interest;
  - The presence of water bodies within the study area;
  - The general nature and level of disturbance of existing vegetation cover within the study area; and
  - The nature and level of anthropogenic disturbances and transformation.
- Determine the sensitivity of the study area with regard to visual resource using the national web-based environmental impact assessment screening tool;
- Determine the visual absorption capacity of the receiving visual landscape;
- Determining the receptor sensitivity to the proposed project;
- Determining the magnitude of potential impacts within the existing visual context by considering the proposed project in terms of:
  - Visibility;
  - Visual intrusion; and
  - Visual exposure.
- Assessing the impact significance by relating the magnitude of the visual impact to:
  - Duration;
  - Severity; and
  - Geographical extent.
- Based on the outcomes of the impact assessment, mitigation measures to reduce the potential negative visual impacts of the project were recommended.

4.0 ASSUMPTIONS AND LIMITATIONS

The following qualification is relevant to the field of VIA and the findings of this study:

- Determining the value, quality and significance of a visual resource or the significance of the visual impact that any activity may have on it, in absolute terms, is not achievable. The value of a visual resource is partly determined by the viewer and is influenced by that person’s socio-economic, cultural and specific family background, and is even subject to fluctuating and intangible factors, such as emotional mood and appreciation of ‘sense of place’.

- This situation is compounded by the fact that the conditions under which the visual resource is viewed can change dramatically due to natural phenomena, such as weather, climatic conditions and seasonal change. Visual impact cannot therefore be measured simply and reliably, as is for instance the case with water, noise or air pollution; and
- It is therefore not possible to conduct a visual assessment without relying to some extent on the expert opinion of a qualified consultant, which is inherently subjective. The subjective opinion of the visual consultant is however unlikely to materially influence the findings and recommendations of this study, as a wide body of scientific knowledge exists in the industry of VIA, on which findings are based.

5.0 BASELINE VISUAL ENVIRONMENT

The visual baseline presented in this section is predicated on site observations, as well as Google Earth imagery. To determine the visual resource value of the study area, the following factors were considered:

- Nature of existing vegetation cover with respects to overall appearance, density and height, and level of disturbance;
- General topography, including prominent or appealing landforms, and their spatial orientation relative to the project site;
- Nature and level of anthropogenic transformation or disturbance;
- Location, physical extent and appearance of water bodies; and
- The perceived level of compatibility of existing land uses.

This section provides a brief overview of the visual baseline environment and context in which the proposed project will take place.

5.1 General Landscape Characteristics

The study area is located in the Mpumalanga Highveld. The region was historically dominated by farming, with vast areas under cultivation and livestock grazing. In recent times however, coal mining has become one of the most dominant land uses, causing significant habitat transformation and possible degradation (see Figure 3 and Figure 4.

Figure 3: Transformation of land associated with coal mining at Zibulo

Figure 4: Transformation of land associated with coal mining at Zibulo

5.2 Topography

The natural topography of the study area ranges from relatively flat to moderately undulating, with occasional low hills located mainly to the south (Figure 5). Low-lying areas are associated with rivers, pan depressions and valley-bottom wetlands.

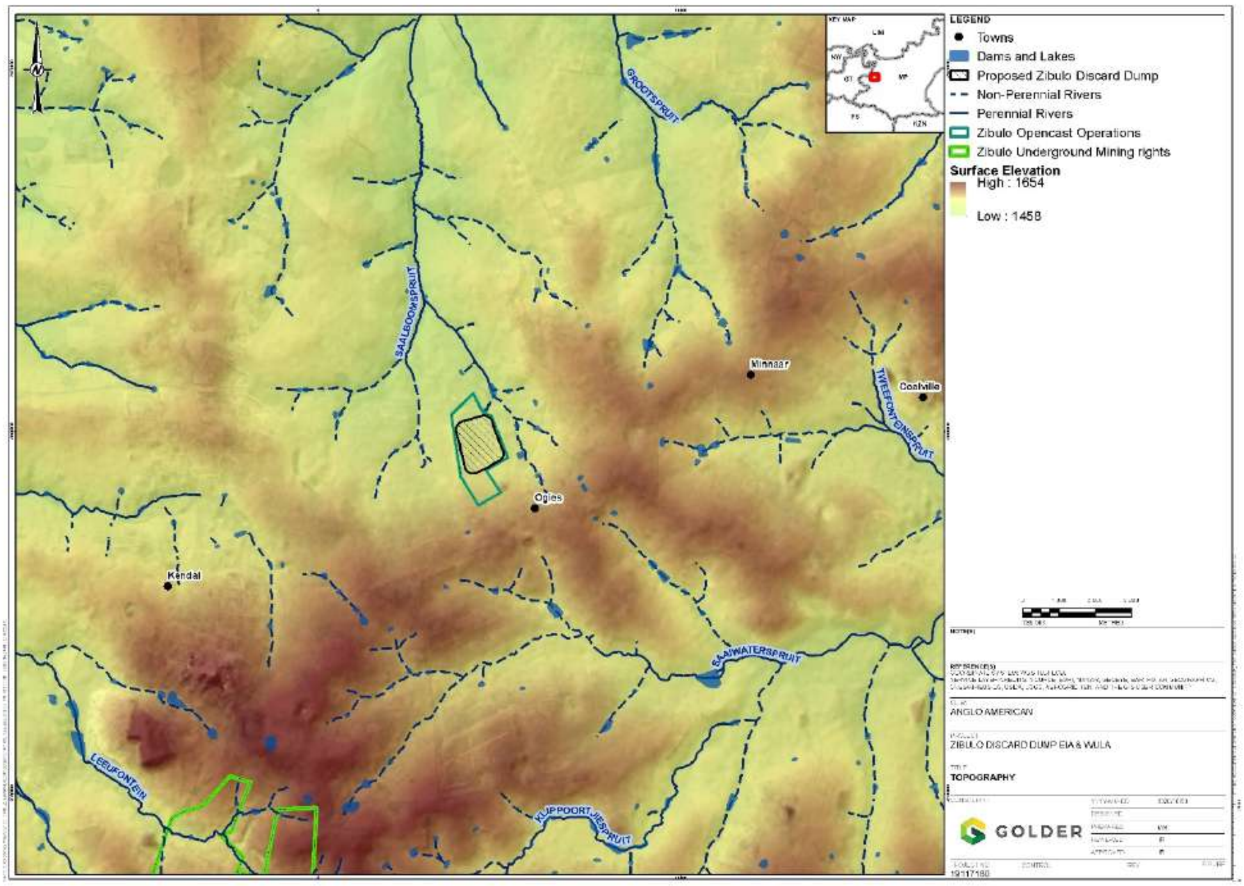


Figure 5: Topography and surface hydrology of regional area surrounding Zibulo operations

5.3 Hydrology (Drainage Features)

The project site falls within the upper watershed of the Olifants River Management Area. Rivers and wetland systems are abundant throughout the study area and merge to form part of the headwaters of the Olifants River. They are thus functionally important.

Prominent local rivers include the Saalboomspruit, Leeufontein, Klippoortjiespruit and Saaiwaterspruit, as shown in Figure 5. The Present Ecological State (PES) of these rivers ranges from Moderately- (Category C) to Seriously Modified (Category E) (DWS, 2014), with the physical attributes of the respective rivers visibly altered to varying degrees by linear infrastructure construction and mining activities. Areas of open water are nevertheless abundant, and typically include stretches of river, earthen farm dams and pan depressions.

5.4 Vegetation Characteristics

At a regional level, most of the study area is located in the Eastern Highveld Grassland vegetation type, with some portions in the north and northwest in Rand Highveld Grassland (Mucina and Rutherford, 2006; SANBI, 2018). Eastern Highveld Grassland is characterised by short dense grassland, comprising grasses and forbs/herbs, and occurs on slightly- to moderately undulating plains. Low hills and pan depressions are also common in the landscape.

5.5 General Land Cover and Land Uses

Mining and agriculture are the dominant land uses in the study area. Consequently, most land is either completely transformed or severely modified.

This is clearly evident in Figure 6. Natural habitat (dark green) is confined to small, typically elongated patches that are often associated with drainage system.

Several mines are present in and surrounding the study area, such as Goedgevonden Colliery and Klipspruit Colliery. These are characterised by vast areas of transformation, and dominated by various infrastructure such as tailings facilities, topsoil-, overburden- and coal stockpiles, fugitive deposits, open pits and plant facilities. All surface infrastructure forms part of the immediate visual resource of the landscape. Agricultural areas consist of open grasslands, which are used for livestock grazing, or cropland, which are generally under maize production.

Outside of the various local mines, other prominent anthropogenic features in the study area and surrounding landscape include, amongst others:

- Kendal Power Station and associated facilities;
- Kusile Power Station and associated facilities; and
- Commercial and residential areas associated with the towns of Phola, Ogies and Wilge.

5.6 Seasonal and Atmospheric Conditions

A further aspect of the visual baseline that needs to be considered is that of weather-related/atmospheric conditions and seasonal variations. Prevailing atmospheric conditions can greatly influence how a landscape is perceived by viewers, as well as the range over which views are possible. The study area is located in a summer rainfall region, with rainfall ranging between 570 to 730 mm (Mucina and Rutherford, 2006). Winters are cold and dry, although mist is common, particularly during winter, greatly reducing visibility when it is present. Airborne pollution in the region is high, often resulting in hazy atmospheric conditions.

In addition, seasonal changes greatly change the appearance of most landscapes, with the Highveld region typically alternating from vast expanses of various hues of green during the rainy season, to more subdued browns and tans during the winter.

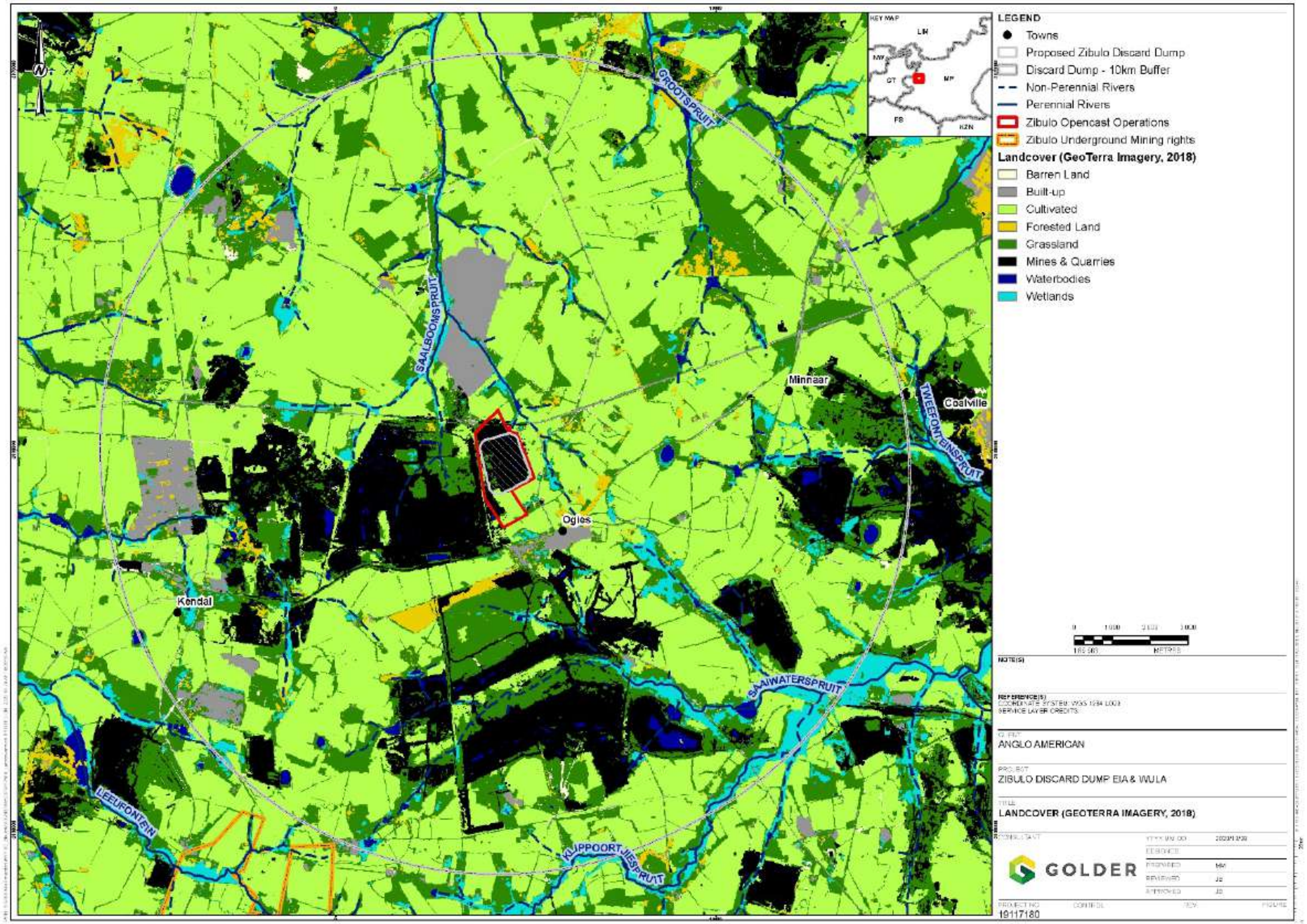


Figure 6: Land cover (2018) in the study area and the surrounding landscape

6.0 VISUAL RESOURCE VALUE OF THE STUDY AREA

Visual resource value refers to the visual quality of elements of an environment, as well as the way in which combinations of elements in an environment appeal to our senses. Studies in perceptual psychology have shown an affinity for landscapes with a higher visual complexity, rather than homogeneous ones (Young, 2004). Furthermore, based on research of human visual preference (Crawford, 1994), landscape quality increases when:

- Prominent topographical features and rugged horizon lines exist;
- Water bodies such as streams or dams are present;
- Untransformed indigenous vegetation cover dominates; and
- Limited presence of human activity, or land uses that are not visually intrusive or dominant prevail.

Further to these factors, Table 1 indicates criteria used for visual resource assessment. The assessment combines visual quality attributes (views, sense of place and aesthetic appeal) with landscape character and gives the landscape a high, moderate or low visual resource value.

A review of the national web-based environmental impact assessment screening tool indicates that the site is not considered sensitive with regard to the visual resource. Nonetheless, it recommends that a visual impact assessment be conducted as part of the environmental assessment process.

Table 1: Visual resource value criteria

Visual Resource Value	Criteria
High (3)	Pristine or near-pristine condition/little to no visible human intervention visible/ characterised by highly scenic or attractive natural features, or cultural heritage sites with high historical or social value and visual appeal/ characterised by highly scenic or attractive features/areas that exhibit a strong positive character with valued features that combine to give the experience of unity, richness and harmony. These are landscapes that may be considered to be of particular importance to conserve and which may be sensitive to
Moderate (2)	Partially transformed or disturbed landscape/human intervention visible but does not dominate view, or is characterised by elements that have some socio-cultural or historic interest but that is not considered visually unique/ scenic appeal of landscape partially compromised/noticeable presence of incongruous elements/areas that exhibit positive character but which may have evidence of degradation/erosion of some features resulting in areas of more mixed character. These landscapes are less important to conserve but may include certain areas or features worthy of conservation.
Low (1)	Extensively transformed or disturbed landscape/human intervention is of visually intrusive nature and dominates available views/scenic appeal of landscape greatly compromised/visual prominence of widely disparate or incongruous land uses and activities/areas generally negative in character with few, if any, valued features. Scope for positive enhancement frequently occurs.

An analysis of the visual resource value of the study area *vis-á-vis* the tabulated factors is discussed below:

- **Topography**: The natural landscape is generally flat to undulating, with low-lying areas and elevated sites associated with wetlands and pans, and small hills, respectively. However, the natural topographical features are mostly unobtrusive and do not form visual landmarks. By contrast, the mining stockpiles are prominent features in the landscape, and generally contrast dramatically and negatively with the natural topographical aesthetic:
  - The topographic value of the study area therefore has a low value.
- **Hydrology**: Despite the presence of various rivers/streams and pans in the study area and these being of at least some visual appeal, none are particularly visually prominent, and are thus not highly significant features within the overall visual context:
  - The visual resource value of the study area's hydrology is therefore considered to be moderate.
- **Vegetation cover**: Natural habitat across the majority of the study area has been transformed or severely modified by mining and agriculture. Stands of alien trees are present, and although they add complexity to the landscape visual character, they are listed as invasive and require removal:
  - The visual resource value of the study area's vegetation cover is therefore expected to be low;
- **Land use**: Mining, agriculture and, to a lesser extent power generation, are the prevailing or most visually prominent land uses across the majority of the study area. Facilities associated with mining and power generation are optically intrusive and detract from the visual aesthetic of the landscape:
  - The visual resource value of the study area's land use is therefore considered to be low.

Summary

In summary, on all metrics the visual resource value of the study area is expected be low - Table 2. The region has undergone considerable alteration from mining, and this has transformed the landscape from a rural farming setting to an impacted, industrial labyrinth that is visually unappealing.

Table 2: Visual resource value determination

Visual baseline attribute	Topography	Water bodies	Vegetation	Land uses
Visual resource value score	1 (low)	2 (moderate)	1 (low)	1 (low)
Total				**5 (low)**

Where:

- 4 – 6 = Low;
- 7 – 9 = Moderate; and
- 10 – 12 = High.

Based on the above score ranges, the overall visual resource value of the study area is rated as LOW (5).

7.0 VISUAL ABSORPTION CAPACITY

Visual absorption capacity (VAC) can be defined as an “estimation of the capacity of the landscape to absorb development without creating a significant change in visual character or producing a reduction in scenic quality” (Oberholzer, 2008). The ability of a landscape to absorb development or additional human intervention is primarily determined by the nature and occurrence of vegetation cover, topographical character and human structures.

A further major factor is the degree of visual contrast between the proposed new project and the existing elements in the landscape. If, for example, a visually prominent industrial development already exists in an area, the capacity of that section of landscape to visually “absorb” additional industrial structures is higher than that of a similar section of landscape that is still in its natural state. VAC is therefore primarily a function of the existing land use and cover, in combination with the topographical ruggedness of the study area and immediate surroundings.

Based on the high degree of landscape transformation within the surrounding landscape, as well as in the project site itself, the VAC of the study area is rated HIGH.

7.1 Visual Absorption Capacity Weighting Factor

To account for the fact that visual impacts are expected to be more intrusive in landscapes with a lower VAC than in those with a higher VAC (regardless of the visual quality of the landscape), a weighting factor is incorporated into the impact magnitude determination, as indicated in Table 3.

Table 3: VAC weighting factor table

Visual resource value of receiving landscape	Low VAC	Medium VAC	High VAC
High resource value	High (1.2)	High (1.2)	Moderate (1.0)
Medium resource value	High (1.2)	Moderate (1.0)	Low (0.8)
Low visual resource value	Moderate (1.0)	Low (0.8)	Low (0.8)

The visual resource value of the study area has been determined to be LOW (5) (refer to section 6.0), while the VAC of the study area has been rated as HIGH (see above). Hence, a LOW (0.8) weighting factor in terms of VAC is applied during the impact assessment.

7.2 Visual Receptor Sensitivity

7.2.1 Receptor Groups

Visual impact is primarily an impact concerned with human interest. Potential viewers, or visual receptors, thus constitute people that might see the proposed development.

Receptor sensitivity refers to the degree to which an activity will actually impact on receptors and depends on how many people see the project, how frequently they are exposed to it and their perceptions regarding aesthetics. Receptors of the proposed mining development can be broadly categorised into two main groups, namely:

- People who live or work in the area, and who will be frequently exposed to the project components (resident receptors); and

- People who travel through the area and are only temporarily exposed to the project components (transient receptors).

Resident receptors in the study area include the residents of the Ogies, Wilge and Phola urban areas, as well as people residing in the numerous farmsteads, small holdings and hamlets that are abundant and scattered throughout the landscape. The locations of receptors, as per existing spatial datasets (SBC, 2009), are shown in Figure 7.

Three important roads traverse through of the study area. The N12 is a major national road linking Gauteng (Johannesburg) to Mozambique, via regionally important cities such as eMalahleni, Middelburg and Nelspruit. The R555 and R545 are smaller provincial roads that traverse east-west and north-south near the study area, respectively. These roads will convey large numbers of transient receptors across the study area.

7.2.2 Receptor Sensitivity and Incidence

The visual receptor sensitivity and incidence can be classified as high, moderate or low, as indicated in Table 4.

Table 4: Visual receptor sensitivity criteria

Number of people that will see the project (incidence factor)	
Large	Towns and cities, along major national roads (e.g. thousands of people)
Moderate	Villages, typically less than 1 000 people
Small	Less than 100 people (e.g. a few households)
Receptor perceived landscape value (sensitivity factor)	
High	People attach a high value to aesthetics, such as in or around a game reserve or conservation area, and the project is perceived to impact significantly on this value of the landscape.
Moderate	People attach a moderate value to aesthetics, such as smaller towns, where natural character is still plentiful and in close range of residency.
Low	People attach a low value to aesthetics, when compared to employment opportunities, for instance. Environments have already been transformed, such as cities and towns.

The following ratings have therefore been applied to the identified visual receptor groups:

- **Resident receptors**: Resident receptors comprise a large number of people (incidence factor) living in the study area. We advance that considering the existing levels of development and transformation in the landscape, people living in urban areas, as well as those living in nearby rural settings, will probably attach a low to moderate value (sensitivity factor) to the project. In essence, we anticipate that these people are probably desensitised to additional modifications to sites that are already highly transformed; and
- **Transient receptors**: People travelling through the study area will include local residents, itinerant workers and regional tourists.

  They will constitute a high number of people (incidence factor), and it is expected that they will also attach a low degree of value to the currently transformed visual setting of the proposed project site (sensitivity factor). This receptor group has thus also been given a low sensitivity rating.

Based on the above, a high number of people (incidence factor) are expected to be visually affected by the project, but the overall perceived landscape value (sensitivity factor) is expected to be LOW (1).

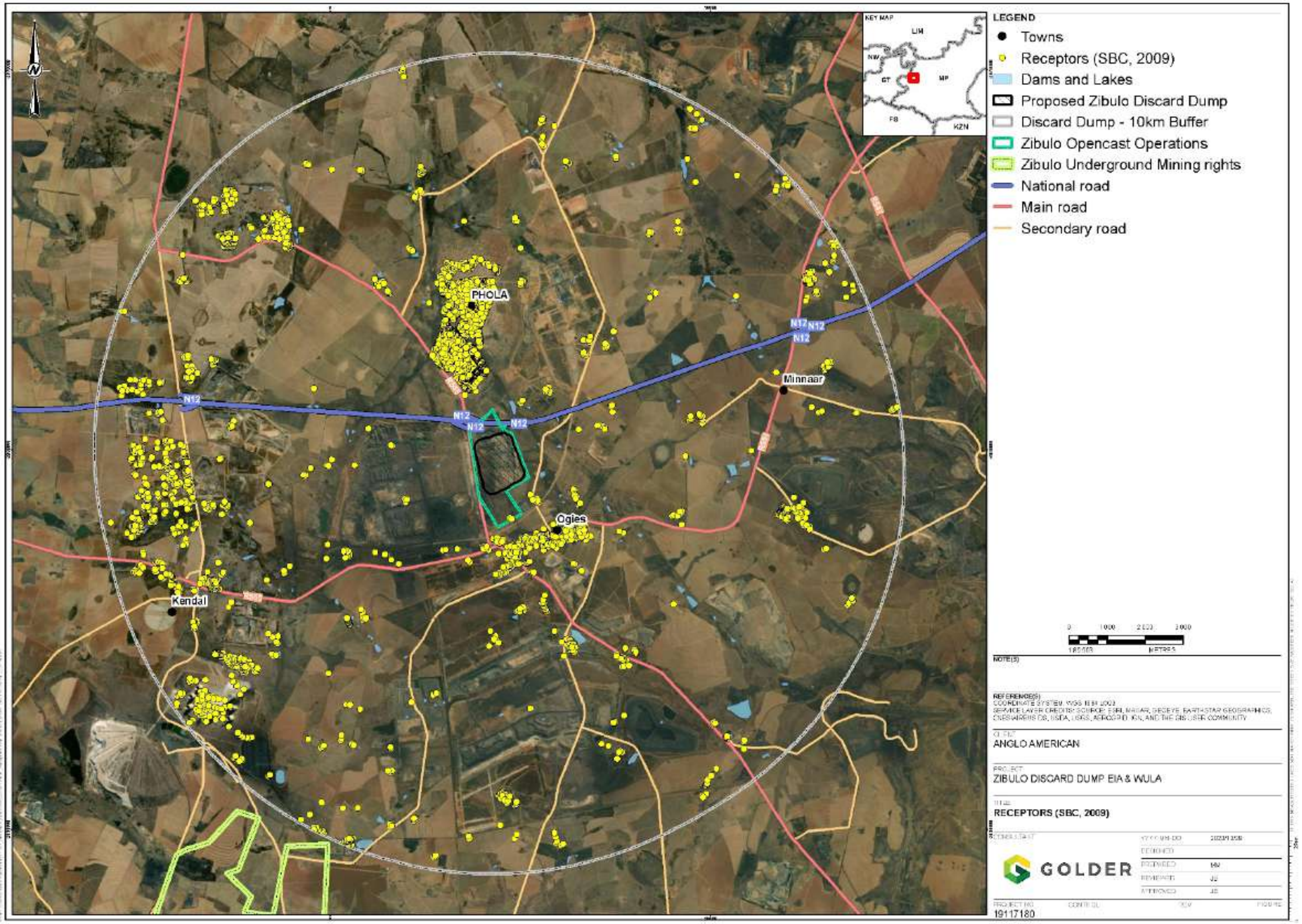


Figure 7: Visual receptors in the study area (10 km buffer around the proposed discard dump)

7.2.3 Receptor Sensitivity Weighting Factor

To determine the magnitude of a visual impact, a weighting factor that accounts for receptor sensitivity is determined (Table 5), based on the number of people that are likely to be exposed to a visual impact (incidence factor) and their expected perception of the value of the visual landscape and project impact (sensitivity factor).

Table 5: Weighting factor for receptor sensitivity criteria

		Number of people that will see the project (incidence factor)		
		Large	Moderate	Small
Receptor perceived landscape value (sensitivity factor)	High	High (1.2)	High (1.2)	Moderate (1.0)
	Moderate	High (1.2)	Moderate (1.0)	Low (0.8)
	Low	Moderate (1.0)	Low (0.8)	Low (0.8)

Based on the receptor sensitivity assessment and the above criteria, a MODERATE weighting factor (1.0) in terms of this aspect is applied during the impact magnitude determination.

8.0 IMPACT ASSESSMENT

8.1 Impact Identification

The following potential visual impacts that may occur during the construction, operational and decommissioning/closure phases of the mine have been identified. For the purposes of this assessment, potential impacts during the construction and operational phases have been grouped together, as they are expected to be largely similar in nature, although potentially of varying magnitude.

8.1.1 Construction and Operational Phases

- Reduction in visual resource value due to presence of the discard dump; and
- Formation of dust plumes as a result of construction and operational activities.

8.1.2 Decommissioning and Closure Phase

- Permanent alteration of site topographical and visual character of due to presence of the discard dump; and
- Visible dust plumes during rehabilitation.

8.2 Impact Magnitude Criteria

The magnitude of a visual impact is determined by considering the visual resource value and VAC of the landscape in which the project will take place, the receptors potentially affected by it, together with the level of visibility of the project components, their degree of visual intrusion and the potential visual exposure of receptors to the project, as further elaborated on below:

8.2.1 Theoretical Visibility

The level of theoretical visibility (LTV) is defined as the sections of the study area from which the proposed discard dump may be visible. This was determined by conducting a viewshed analysis and using Geographic Information System software with three-dimensional topographical modelling capabilities.

The basis of a viewshed analysis is a Digital Elevation Model (DEM). The DEM for this viewshed analysis was derived from 5 m contour lines. A 10 km study area surrounding the site was used for the analysis.

The viewshed was developed for the proposed discard dump using contours for the dump that range from 1 528 m to 1 579 m with observer points set around and on top of the dump. The LTV based on the results of the viewshed analysis was then rated according to Table 6. We highlight that ongoing mining activities are causing continuing, and in some cases substantial modification to local-scale topography. Artificial landforms, such as berms and stockpiles, and indeed tall vegetation (particularly alien tree windrows and plantations) are not reflected in the DEM, yet these may act to visually screen the proposed infrastructure. The results of the viewshed analysis are thus considered conservative within the context of the study area.

The viewshed was modelled on the above-mentioned DEM, adjusted to include the proposed site layout, using Esri ArcGIS for Desktop software, 3D Analysist Extension. The results are presented in Figure 8.

Table 6: Level of visibility rating

Level of theoretical visibility of project element	Visibility rating
Less than a quarter of the total project study area	Low (1)
Between a quarter and half of the study area	Moderate (2)
More than half of the study area	High (3)

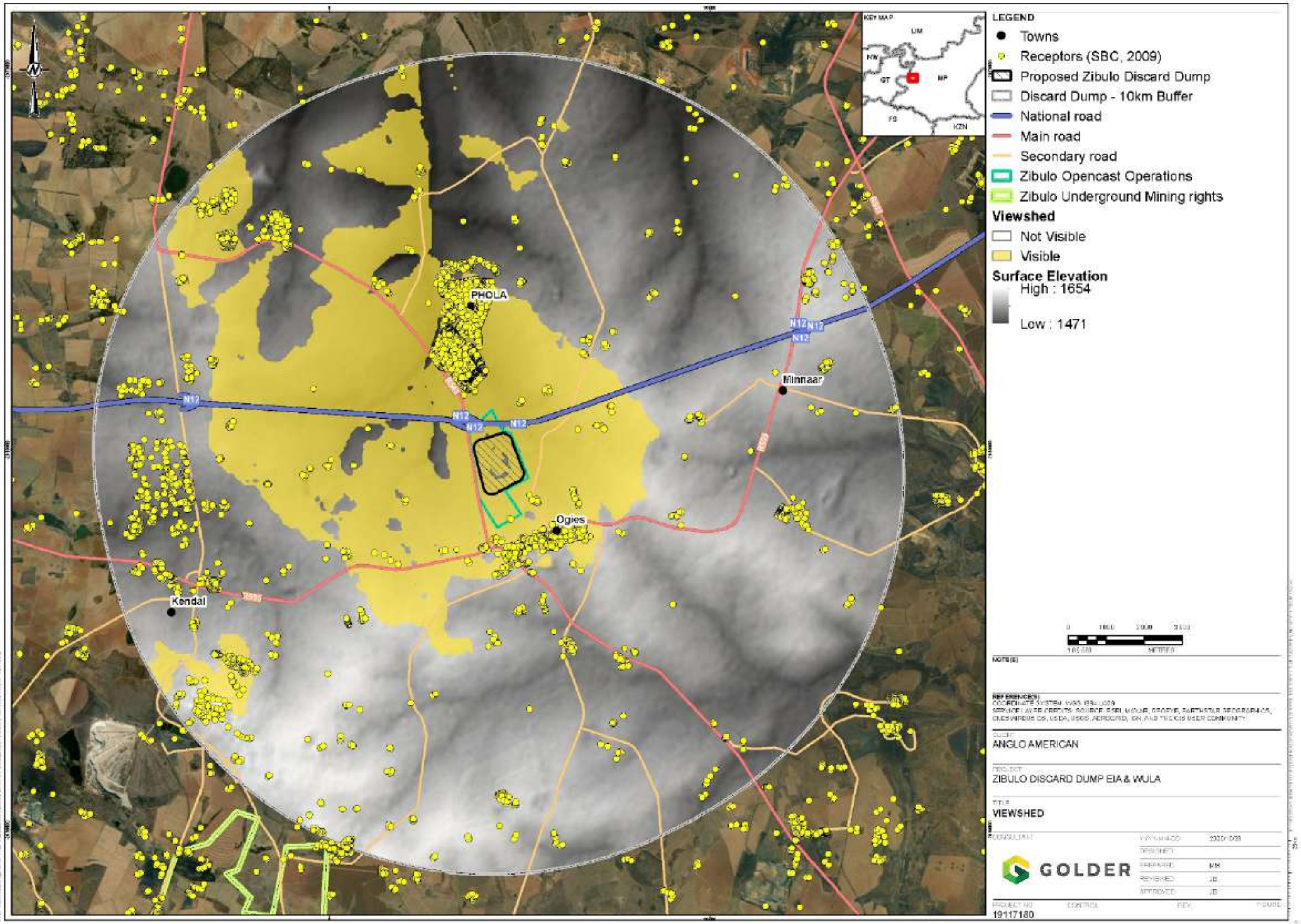


Figure 8: Viewshed from proposed discard dump

8.2.1.1 Construction and Operational Phase Impacts

- **Presence of the discard dump:** The final height of the proposed discard dump will vary between 1 528 m and 1 579 m. The viewshed indicates a facility of this height will be visible from a fairly large proportion of the study area - Figure 8, including several urban locales, such as *inter alia*, Phola, Ogies, Wilge and Kendal Village. Amongst other mediating factors that cannot be incorporated into the Viewshed analysis, yet are likely to influence the LTV we note that:
  - A large earthen berm runs parallel to the N12 highway for much of the length of the Zibulo opencast operations. This is likely to screen the proposed discard dump from locales to the north of the N12, including the Phola residential area; and
  - Similarly, a series of pine tree windrows surround the grain silos at Ogies. These along with other features such as the silos themselves, are also likely to screen the discard dump from receptors in the town.
- Based on the viewshed and the above considerations, the LTV of the discard dump is conservatively rated at MODERATE (2), in line with the criteria set out in Table 6.
- **Formation of dust plumes:** During construction and operations, and especially during dry and windy conditions, it is expected that activities at the discard dump will result in airborne dust plumes, which may be visible over great distances. For this reason, the level of visibility of dust plumes associated with mining construction and operations is also expected to be MODERATE (2).

8.2.1.2 Decommissioning and Closure Phase Impacts

- **Permanent alteration of topography as a result of the discard dump:** At final closure, the discard dump will remain in place, but it will be shaped and revegetated. It will still however, be visible across those areas of the landscape where it was visible during operations. The LTV thus remains moderate during this phase; and
- **Formation of dust plumes:** Initial rehabilitation activities are expected to cause dust entrainment. However, the frequency will reduce as revegetation progresses. The visibility of this impact is therefore expected to be low in the study area during this phase.

8.2.2 Visual Intrusion

Visual intrusion deals with how well the project components fit into the ecological and cultural aesthetic of the landscape as a whole. An object will have a greater negative impact on scenes considered to have a high visual quality than on scenes of low quality because the most scenic areas have the "most to lose".

The visual impact of a proposed landscape alteration also decreases as the complexity of the context within which it takes place, increases. If the existing visual context of the site is relatively simple and uniform any alterations or the addition of human-made elements tend to be very noticeable, whereas the same alterations in a visually complex and varied context do not attract as much attention. Especially as distance increases, the object becomes less of a focal point because there is more visual distraction, and the observer's attention is diverted by the complexity of the scene (Hull and Bishop, 1998). The expected level of visual intrusion of each of the project components is assessed below.

8.2.2.1 Construction and Operational Phase Impacts

- **Presence of the discard dump:** Despite the stark contradistinction between the height and geometric shape of the discard dump and the natural setting, the study area and surrounding landscape are currently highly modified and thus already visually complex. The discard dump is therefore expected to have a LOW (1) intrusive value; and

- **Formation of dust plumes:** Dust plumes are often one of the more socially objectionable impacts associated with opencast mining, due to the associated potential health risks, nuisance factor and degradation of the visual amenity value of the surrounding landscape. Existing operations at Klipspruit Colliery and many of the surrounding mining operations currently generate large volumes of dust. Considering this baseline, dust impact has a LOW (1) intrusive value from a visual perspective.

8.2.2.2 Decommissioning and Closure Phase Impacts

- **Presence of the discard dump:** At final closure, the discard dump will remain in place, but it will be shaped and revegetated. It will thus have a low intrusive value at this stage during this phase; and
- **Formation of dust plumes:** Initial rehabilitation activities are expected to cause dust entrainment from the project site. However, the frequency will reduce as revegetation progresses. The intrusion of dust will therefore remain low in the study area during this phase.

8.2.3 Visual Exposure

The visual impact of a development diminishes at an exponential rate as the distance between the observer and the object increases – refer to Figure 9. Relative humidity and fog in the area directly influence the effect. Increased humidity causes the air to appear greyer, diminishing detail. Thus, the impact at 1 000 m would be 25% of the impact as viewed from 500 m. At 2 000 m it would be 10% of the impact at 500 m. The inverse relationship of distance and visual impact is well recognised in visual analysis literature (Hull and Bishop, 1998) and was used as important criteria for this study.

Thus, visual exposure is an expression of how close receptors are expected to get to the proposed interventions on a regular basis. For the purposes of this assessment, close range views (equating to a high level of visual exposure) are views over a distance of 500 m or less, medium-range views (equating to a moderate/medium level of visual exposure) are views of 500 m to 2 km, and long range views are over distances greater than 2 km (low levels of visual exposure).

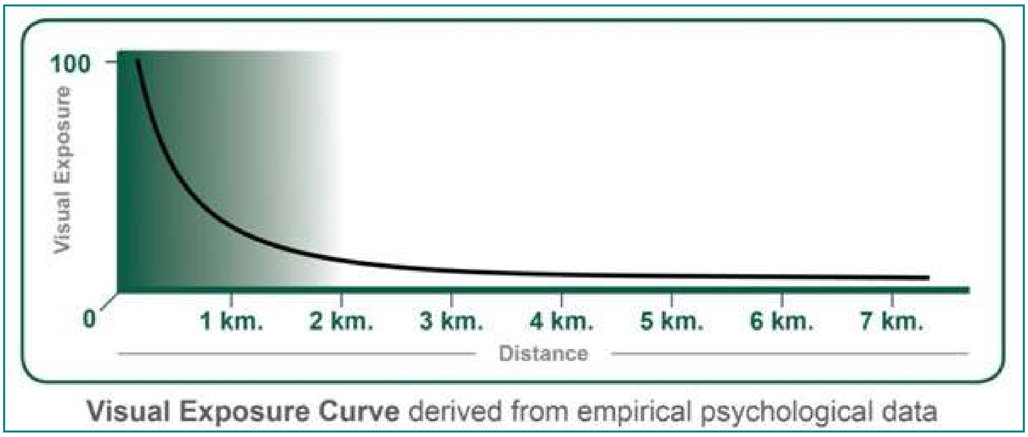


Figure 9: Visual exposure graph

8.2.3.1 Construction and Operational Phase Impacts

- **All identified impacts:** Few receptors are located in close proximity to the project site - the outskirts of Phola and Ogies, which constitutes the closest prominent urban areas, are located about 1.4 km and 1.6 km from the project site, respectively. Although most of these potential vantage points will at least be partially screened from view by the earthen embankment located directly south of the N12, the majority of the visual receptors are located within medium-range view of the proposed dump. Accordingly, a notable number of views of the proposed discard dump and associated impacts which includes the N12 highway and R549 road will be from short-to medium range positions, and thus have MODERATE (2) levels of visual exposure.

8.2.3.2 Decommissioning and Closure Phase Impacts

- **All identified impacts:** As is the case with the construction and operations phase impacts, most visual receptors are located beyond 2 km of the project site and visual exposure to the rehabilitation/closure related impacts is therefore rated as low.

8.3 Impact Magnitude Methodology

The expected impact magnitude of the proposed project was rated, based on the above assessment of the visual resource value of the site, as well as level of visibility, visual intrusion, visual exposure and receptor sensitivity as visual impact criteria. The process is summarised below.

- *Magnitude* = [(*Visual quality of the site x VAC factor*) *x* (*Visibility* + *Visual Intrusion* + *Visual Exposure*)] *x Receptor sensitivity factor*.

  Thus: [(*1 x Factor 1.0*) *x* (*1* + *1* + *1*)] *x Factor 1 = 3.*

From the above equation the maximum magnitude point (MP) score is 38.9 points. The possible range of MP scores is then categorised as indicated in Table 7.

Table 7: Impact magnitude point score range

MP Score	Magnitude rating
20.1≤	High
13.1 - 20.0	Moderate
6.1 - 13.0	Low
≤6.0	Negligible

8.4 Impact Magnitude Determination

Based on the visual resource, VAC, receptor sensitivity and impact assessment criteria assessed in the preceding sections, the magnitude of the various impacts identified was determined for each phase of the project. Consequently, the impact magnitude determination for the construction and operational phases and for the closure phase is presented in Table 8.

Table 8: Determination of impact magnitude

Visual impact	Study area visual resource value	VAC weighting factor	Level of visibility	Visual intrusion	Visual exposure	Receptor sensitivity factor	Impact magnitude point score
Construction and Operational Phases							
Presence of discard dump	1	0.8	2	1	2	1	4
Formation of dust plumes	1	0.8	2	1	2	1	4
Decommissioning and Closure Phases							
Presence of discard dump	1	0.8	2	1	2	1	4
Formation of dust plumes	1	0.8	2	1	2	1	4
Where for: visual resource value, visibility, visual intrusion and visual exposure: high=3; moderate=2; low=1; and receptor sensitivity: high = factor 1.2; moderate = factor 1; low = factor 0.8							

Based on the above ranking, the magnitude of the respective impacts has been determined as being negligible.

8.5 Impact Assessment Rating Methodology

The significance of the identified impacts will be determined using the approach outlined below (terminology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998). This approach incorporates two aspects for assessing the potential significance of impacts, namely occurrence and severity, which are further sub-divided as follows:

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Scale/extent of impact	Magnitude (severity) of impact

To assess each of these factors for each impact, the following four ranking scales are used:

Table 9: Ranking scales for assessment of occurrence and severity factors

Probability	Duration
5 - Definite/don't know	5 - Permanent
4 - Highly probable	4 - Long-term
3 - Medium probability	3 - Medium-term (8 - 15 years)
2 - Low probability	2 - Short-term (0 - 7 years) (impact ceases after the operational life of the activity)
1 - Improbable	1 – Immediate
0 - None	
Scale	**Magnitude**
5 - International	10 - Very high/don't know
4 - National	8 - High
3 - Regional	6 - Moderate
2 - Local	4 - Low
1 - Site only	2 - Minor
0 - None	

Once these factors are ranked for each impact, the significance of the two aspects, occurrence and severity, is assessed using the following formula:

- **SP (significance points) = (magnitude + duration + scale) x probability.**

The maximum value is 100 significance points (SP). The impact significance will then be rated as follows:

SP >75	Indicates high environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP 30 – 75	Indicates moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated.
SP <30	Indicates low environmental significance	Impacts with little real effect and which should not have an influence on or require modification of the project design.
+	Positive impact	An impact that constitutes an improvement over pre-project conditions.

8.6 Determination of Impact Significance

Using the above criteria, the results of the impact significance assessment before and after mitigation, for the Construction and Operation Phase, as well as Decommissioning and Closure phase impacts, are presented in Table 10. Recommended mitigation measures are discussed in section 9.0.

Table 10: Rating of impact significance

PHASE	POTENTIAL VISUAL IMPACTS	VISUAL SIGNIFICANCE											
		Before mitigation						After mitigation					
		M	D	S	P	SP	Rating	M	D	S	P	SP	Rating
Construction and operation phase	Presence of the discard dump	2	4	2	5	40	**Moderate**	2	3	2	4	28	**Low**
	Formation of dust plumes	2	3	2	4	32	**Moderate**	2	3	2	3	21	**Low**
Decommissioning and closure phase	Presence of the discard dump	2	4	2	4	32	**Moderate**	N.A. (decommissioning and rehabilitation measures constitutes visual mitigation)					
	Formation of dust plumes	2	2	2	4	24	**Low**	2	3	2	2	14	**Low**

9.0 RECOMMENDED MITIGATION MEASURES

Visual mitigation of a mine can be approached in two ways, and usually a combination of the two methodologies is most effective. The first option is to implement measures that attempt to reduce the visibility of the sources of a visual impact. Thus, an attempt is made to "hide" the source of the visual impact from view, by placing visually appealing elements between the viewer and the source of the visual impact.

The second option aims to minimise the degree or severity of the visual impact itself, and usually involves altering the source of the impact in such a way that it is smaller in physical extent and/or less intrusive in appearance. This can be done by decreasing the size of disturbances, such as stockpiles, dumps and buildings or by shaping, positioning, colouring and/or covering them in such a way that they blend in with the surrounding scenery to a certain degree. For instance, the visual impact of an artificial landform can be reduced somewhat by shaping it in an appropriate fashion, covering it with topsoil, re-seeding it with indigenous grasses, etc.

Construction and operational mitigation possibilities are very limited for the proposed project, as a result of the scale and location of the mine, as well as the functional/operational requirements of the infrastructure and mining areas. Visual mitigation efforts should therefore be focussed on reducing the long-term post-closure impacts caused by the mine, through effective post-operational rehabilitation.

The proposed visual mitigation measures for the construction, operational and decommissioning and closure phases are presented in Table 11.

Table 11: Recommended mitigation measures for visual impacts

Component	Mitigation Measures
Construction Phase	
Dust control	■ Water down haul roads and large bare areas as frequently as is required to minimise airborne dust ■ Apply chemical dust suppressants if deemed necessary ■ Enforce a 40 km/h speed limit on-site for all vehicles ■ Continue to monitor dust fallout using the existing dust monitoring programme
Operational Phase	
Discard dump	■ If possible, implement rehabilitation of the discard dump to reduce the visual intrusion, including: ▪ Shape the dump side slopes and crest to pre-determined maximum gradient/s which will prevent erosion and allow for adequate vegetation growth ▪ Place growth medium to a suitable depth and re-vegetate using a suitable mix of indigenous grass species
Dust control	See recommendations for Construction Phase
Decommissioning and Closure	
Discard dump rehabilitation	■ Shape the discard dump to be as natural in appearance as possible ■ Distribute topsoil over the discard dump and actively revegetate (using grasses) to establish a vigorous and self-sustaining vegetation cover

Component	Mitigation Measures
	■ Conduct on-going monitoring and maintenance of the rehabilitated areas to ensure that vegetation establishes successfully, and that erosion does not occur ■ Employ ongoing control measures to eradicate weedy and alien invader plant species
Dust control	■ Continue to implement dust control (as prescribed for the construction phase) until such as time as vegetation has successfully established and dust is no longer a concern

10.0 CUMULATIVE IMPACTS

The region was predominantly an agricultural landscape that has been substantially transformed by mining over the recent years. The cumulative impact associated with the existing visual impacts from the existing mine infrastructure and facilities, coupled with the anticipated visual impacts from the proposed discard dump may negatively affect the general visual aesthetics of the broader region. We note that various infrastructure and facilities associated with these mines will be removed during decommissioning and closure, and the footprints rehabilitated. Other facilities however, such as the discard dump, will remain permanent visible features of the landscape even following rehabilitation and revegetation. The levels for cumulative impacts are considered the same for the project impacts ratings as provided in the previous sections.

11.0 CONCLUSIONS

The project site is located in a highly modified setting. Various mine infrastructure and activities have transformed the study area from an agriculture-dominated landscape, characterised by mosaic of undulating grasslands and crop fields, to a significantly developed and complex landscape. Accordingly, and in contrast to the former state, the study area currently has a low visual resource value.

The proposed project will have negative impacts on the visual environment. These centre on the physical presence of the discard dump (29 m in height) and the resulting dust generation. We anticipate, however that these impacts will be largely ‘absorbed’ by the prevailing transformed character of the study area. They are thus rated as having low significance. This rating is predicated on the implementation of the mitigation measures outlined in section 9.0.

12.0 REFERENCES

Crawford, D. (1994) Using remotely sensed data in landscape visual quality assessment, *Landscape and Urban Planning*, 30, pp. 71–81.

DWS (2014) A Desktop Assessment of the Present Ecological State, Ecological Importance and Ecological Sensitivity per Sub Quaternary Reaches for Secondary Catchments in South Africa, *RQIS-RDM*. Available from: www.dwa.gov.za/iwqs/rhp/eco/peseismodel.aspx [Accessed 20 September 2006].

Hull, R. and Bishop, I. (1998) Scenic Impacts of Electricity Transmission Towers: The influence of landscape type and observer distance, *Journal of Environmental Management*, pp. 99–108.

Mucina, L. and Rutherford, M. (2006) *The Vegetation of South Africa, Lesotho and Swaziland*. Pretoria: Reprint 2011, Strelitzia 19, South African National Biodiversity Institute (SANBI).

Oberholzer, B. (2008) Guideline for involving visual and aesthetic specialists in EIA processes, *DEA Visual Guideline*, Edition 1.

SBC (2009) *SPOT Building Count*.

Young, G. (2004) *Visual impact assessment for proposed long-term coal supply to Eskom's Majuba NLA*. Johannesburg.

Signature Page

Golder Associates Africa (Pty) Ltd.

Megan Wolff

Johan Bothma

M Welff
GIS Technician

J Bothma
Closure Planning Service Lead

MW/JB/mc

Reg. No. 2002/007104/07
Directors: RGM Heath, MQ Mokulubete, MC Mazibuko (Mondli Colbert), GYW Ngoma

https://golderassociates.sharepoint.com/sites/104294/project files/6 deliverables/19117180-336651-8_via/19117180-336651-8_zibulo_via_final_15apr21.docx

APPENDIX A

Document Limitations

DOCUMENT LIMITATION

This Document has been provided by Golder Associates Africa Pty Ltd (“Golder”) subject to the following limitations:

i) This Document has been prepared for the particular purpose outlined in Golder’s proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

ii) The scope and the period of Golder’s Services are as described in Golder’s proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

iii) Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

iv) In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder’s opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

v) Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

vi) Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

vii) The Client acknowledges that Golder may have retained sub-consultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all of its sub-consultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder’s affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder’s affiliated companies, and their employees, officers and directors.

viii) This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

GOLDER IN AFRICA

APPENDIX B

Specialist Project Experience

SPECIALIST EXPERIENCE

Megan Welff

Golder Associates Africa (Pty.) Ltd. – Johannesburg

Geographic Information Systems Technician

Megan specialises in using GIS and geospatial tool to process, visualize and analyze environmental data related to surface water, geology, hydrology, soils and mining. She has 2 years of GIS and geospatial analysis experience involving database management, filling and storing; data capturing and cleaning; and map production.

Megan has done viewshed analyses and mapping for:

- Klipspruit Colliery – South 32, South Africa (2019)
- Seriti's New Largo Coal Mine – Seriti, South Africa (2020)

Johan Bothma

Golder Associates Africa (Pty.) Ltd. – Johannesburg

Senior Land Use and Closure Consultant

Johan is a senior closure planning and costing consultant in the Land Use and Closure Team based in the Pretoria, South Africa office. He has 15 years consulting experience and is currently advancing closure costing and planning for mining and industrial sites, with a focus on next land use planning and risk mitigation. Johan has completed many closure related projects for a wide variety of different commodity mines throughout Africa and abroad.

He also specialises in visual assessment and technical direction of graphic representation of project impacts and mitigation. He furthermore has considerable experience in impact assessment, environmental management plans and auditing for mining, industrial, commercial and property development and projects.

Some of the visual impact assessments Johan has conducted include:

- CNOOC – Lake Albert, Uganda (2016 - 2018)
- Zonnebloem, Schoonoord, Brakfontein, Optimum, Rondebult, Doornrug, and Middelkraal mines – various locations in South Africa (2006-2013)
- Lonmin solar plant - North West Province, South Africa (2013)
- Letlhakane and Jwaneng diamond mines, Botswana (2012)

golder.com

08 April 2021 Project No. 19117180 Letter 003

Ms Melissa Hallquist-Waites
Anglo American Inyosi Coal (Pty) Ltd
Supply Chain
Ground Floor Security
55 Marshall Street
Johannesburg

Dear Melissa

ANGLO AMERICAN INYOSI COAL (PTY) LTD: EXEMPTION LETTER – PROPOSED DISCARD FACILITY AT THE ZIBULO OPENCAST OPERATION

Anglo American Inyosi Coal (Pty) Ltd (AAIC) proposes to develop a discard facility at its opencast operations at Zibulo Colliery, situated near Ogies in the Mpumalanga Province. Currently, coal from the opencast operation (and underground operation further south) is transported to the Phola Coal Processing Plant (PCPP). The PCPP is a 50:50 joint venture between AAIC and South32 SA Coal Holdings (Pty) Ltd (South32). The coarse and fine discard produced by PCPP is currently stored in a surface discard facility at South32's Klipspruit Colliery. The facility is reaching capacity (110 ha) by 2021 and an alternative discard facility is required to service the discard requirement of Zibulo Colliery.

It is proposed that a new discard facility be developed over the mined-out opencast pit at Zibulo Colliery.The discard (generated at PCPP) will be transported to the site via a new discard conveyor.

The proposed discard facility will require a waste management licence (WML) in terms of the National Environmental Management Waste Act, 2008 (Act 59 of 2008) (as amended) (NEMWA), an environmental authorisation (EA) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA), and water use licence (WUL) in terms of the National Water Act, 1998 (Act 36 of 1998) (NWA) (as amended). The WML and EA application will need to be supported by a full environmental impact assessment (EIA) process (scoping and impact assessment phases) in terms of the Environmental Impact Assessment Regulations, 2014 (as amended). The competent authority for the application is the Department of Mineral Resources and Energy (DMRE).

As part of the EIA process, a number of specialist studies are being conducted. The National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA) requires that a heritage and paleontological impact assessment be conducted for proposed developments. Since the proposed discard facility and discard conveyor will be located on disturbed land, an exemption from the requirements of the NHRA to conduct a paleontological impact assessment has been compiled by a palaeontologist.

Please see attached the exemption letter related to the paleontological impact assessment.

Your sincerely,

Golder Associates Africa (Pty) Ltd.

Olivia Allen
Environmental Assessment Practitioner

Brent Baxter
Project Director

OA/BB/nbh

Attachments: Palaeontological impact assessment exemption letter

https://golderassociates.sharepoint.com/sites/104294/project files/7 correspondence/letters/19117180_let003_anglozibulodd_epia_final_08apr21.docx

Exemption Letter – Proposed Discard Facility at the Zibulo Opencast Operation

Heidi Fourie – Palaeontological Impact Assessment

eMalahleni Local Municipality, Nkangala District Municipality, Mpumalanga Province.
Farm: Oogiesfontein 4-IS
MP 30/5/1/2/2/338 EM

Protocol for a Chance Fossil Find is included.

The applicant, Anglo American Inyosi Coal (Pty) Ltd (AAIC) proposes to develop a Discard Facility at its opencast operations at Zibulo Colliery, situated near the town of Ogies.

Summary
This letter serves as a Letter of Exemption. It is in compliance with The Minimum Standards for Palaeontological Components of Heritage Impact Assessment Reports, SAHRA APMHOB, Guidelines 2012. The development is underlain by the rocks of the Vryheid Formation, Permian age with a **VERY HIGH** Palaeontological Sensitivity (Groenewald and Groenewald 2014*). As this development will take place on the already mined out, disturbed and partially rehabilitated pit/opencast and mining area and will only be surface infrastructure, therefore, the impact will be **LOW.**

AAIC 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. The coarse and fine discard produced from the PCPP is currently deposited onto a surface discard facility on South32's Klipspruit Colliery. The current facility is reaching capacity and by 2021 an alternative discard facility is required to service the discard requirement of Zibulo Colliery. An existing conveyor will be extended. The new discard facility will have a life of approximately 15 years, a total discard disposal capacity of 26 000 m^2 and extend over an area of 150 ha. It will be developed over the mined-out opencast pit at Zibulo Colliery.

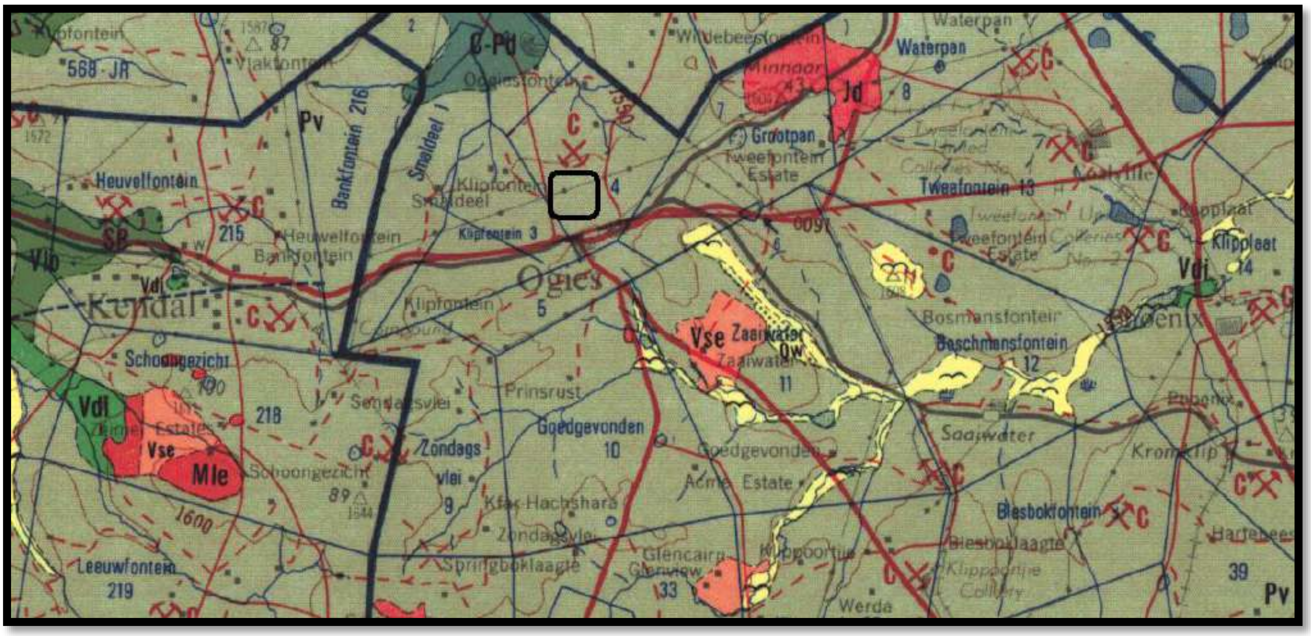


Figure 1: Geology of area (1:250 000 East Rand 2628, Keyser *et al.* 1986)
Legend to Map and short Explanation:

Pv – Shale, sandstone, coal beds (light brown). Vryheid Formation, Ecca Group, Karoo Supergroup. Permian.
----- - - Concealed geological boundary.
----f--- - Fault
⊥ 60˚ - Strike and dip.
□ – Approximate position of development.

The mine is already operational and situated on the Vryheid Formation. The Vryheid Formation is named after the type area of Vryheid-Volksrust. In the north-eastern part of the basin the Vryheid Formation thins and eventually wedges out towards the south, southwest and west with increasing distance from its source area to the east and northeast (Johnson 2009). The Vryheid Formation consists essentially of sandstone, shale, and subordinate coal beds, and has a maximum total thickness of 500 m. It forms part of the Middle Ecca (Kent 1980). This formation has the largest coal reserves in South Africa. The pro-delta sediments are characterised by trace and plants fossils (Snyman 1996).

The Glossopteris flora is thought to have been the major contributor to the coal beds of the Ecca. These are found in Karoo-age rocks across Africa, South America, Antarctica, Australia and India. This was one of the early clues to the theory of a former unified Gondwana landmass (Norman and Whitfield 2006). Rocks of Permian age in South Africa are particularly rich in fossil plants (Rayner and Coventry 1985). The fossils are present in the grey shale interlayered with the coal seams. The fossils are not very rare and occur also in other parts of the Karoo stratigraphy. It is often difficult to spot the greyish fossils as they are the same colour as the grey shale in which they are present as these coalified compressions have been weathered to leave surface replicas on the enclosing shale matrix. The pollen of the Greenside Colliery near Witbank also on the Vryheid Formation was the focus of a Ph.D study. A locality close to Ermelo, also Vryheid Formation, has yielded *Scutum, Glossopteris* leaves, *Neoggerathiopsis* leaves, the lycopod *Cyclodendron leslii,* and various seeds and scale leaves (Prevec 2011).

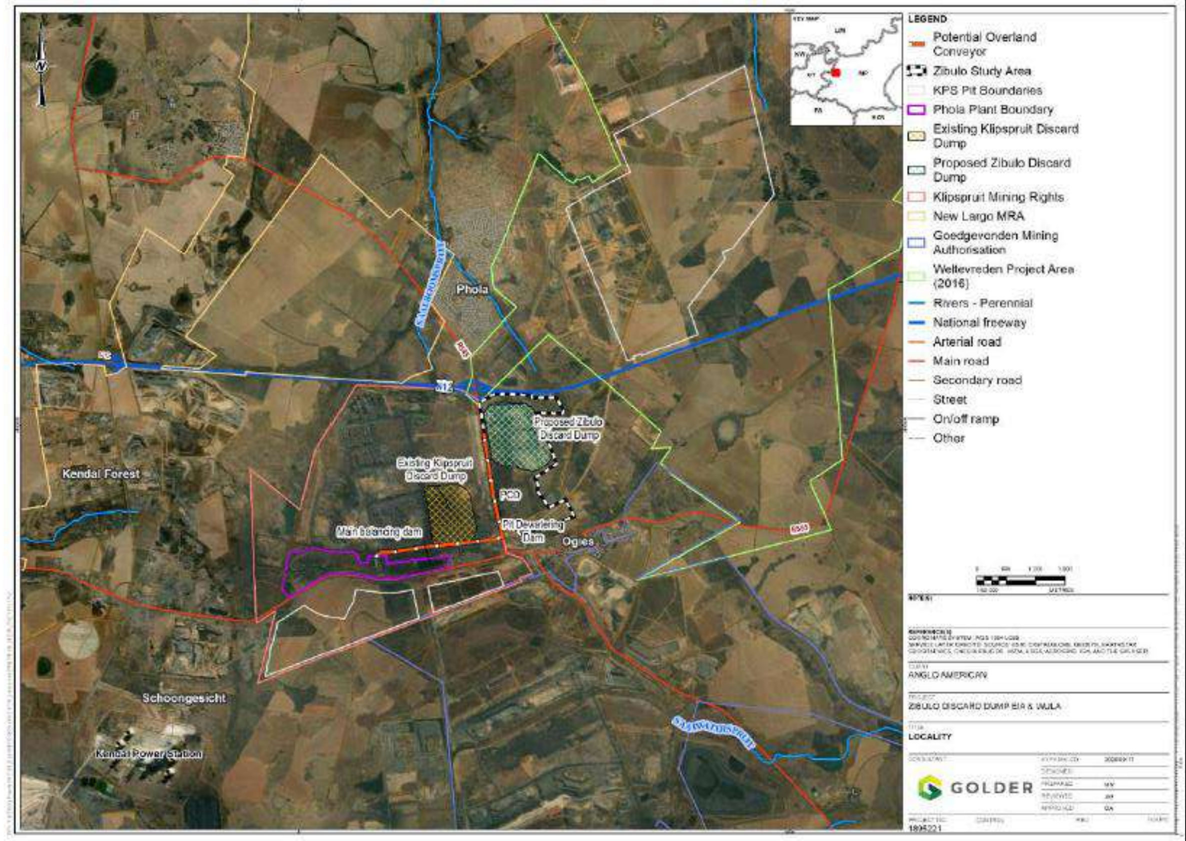


Figure 2: Locality of the proposed discard facility and proposed conveyor route

Figure 2: Location map (Golder).

Figure 3: Enlarged google image to show disturbed surface (Golder).

Palaeontological Sensitivity

Deltaic mudrocks and sandstones, locally coastal and fluvial deposits, with occasional coal seams (Ecca "Coal Measures")	Rich fossil plant assemblages of the Permian Glossopteris Flora (lycopods, rare ferns and horsetails, abundant glossopterids, cordaitaleans, conifers, ginkgoaleans), rare fossil wood, diverse palynomorphs. Abundant, low diversity trace fossils, rare insects, possible conchostracans, non-marine bivalves, fish scales.	Globally important fossil floras from Middle Permian Gondwana. Seriously under-collected in recent years, despite ongoing mining for coal

*Groenewald, G. and Groenewald, D., 2014. SAHRA Palaeotechnical Report: Palaeontological Heritage of the Mpumalanga Province (Pp 23), South African Heritage Resources Agency.

Recommendation

That Exemption from a full Phase 1: Field Study for the proposed Zibulo Discard Facility Development over the mined-out Zibulo Colliery be granted to the applicant taking into consideration all the above stated information.

Declaration (disclaimer)

I, Heidi Fourie, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development project for which I was appointed to do a palaeontological assessment. There are no circumstances that compromise the objectivity of me performing such work.

I accept no liability, and the client, by receiving this document, indemnifies me against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the use of the information contained in this document.

It may be possible that the Exemption Letter may have missed palaeontological resources in the project area as outcrops are not always present or visible on geological maps while others may lie below the overburden of earth and may only be present once development commences.

This report may not be altered in any way and any parts drawn from this report must make reference to this letter.

Heidi Fourie
2021/04/08

Protocol for Chance Finds and Management plan

This section covers the recommended protocol for a Phase 2 Mitigation process as well as for reports where the Palaeontological Sensitivity is **LOW**; this process guides the palaeontologist / palaeobotanist / ECO on site and should not be attempted by the layman / developer.

- As part of the Environmental Authorisation conditions, an Environmental Control Officer (ECO) will be appointed to oversee the construction/prospecting/mining activities in line with the legally binding Environmental Management Programme (EMPr) so that when a fossil is unearthed they can notify the relevant department and specialist to further investigate.
- The ECO should put any fossil finds in a safe place for further investigation by a suitably qualified person.

- The ECO should familiarise him- or herself with the applicable formations and its fossils.
- Most Universities and Museums have good examples of fossils.
- The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction/prospecting/mining activities. For a chance fossil find, the protocol is to cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation. A formal procedure will be drafted for this.
- It is recommended that the EMPr be updated to include the involvement of a palaeontologist when necessary, either for pre-construction training of ECO or for pre-determined site visits. The ECO must visit the site after clearing, drilling, excavations and blasting and keep a photographic record.
- The developer may be asked to survey the areas affected by the development and indicate on plan where the construction / development / mining will take place. Trenches may have to be dug to ascertain how deep the sediments are above the bedrock (can be a few hundred metres). This will give an indication of the depth of the topsoil, subsoil, and overburden, if need be trenches should be dug deeper to expose the interburden.

The palaeontological impact assessment process presents an opportunity for identification, access and possibly salvage of fossils and add to the few good localities. Mitigation can provide valuable onsite research that can benefit both the community and the palaeontological fraternity. A Phase 2 study is very often the last opportunity we will ever have to record the fossil heritage within the development area. Fossils excavated will be stored at a National Repository.

Bibliography

GRODNER, M. and CAIRNCROSS, B. 2003. A regional scale 3-D model of the Witbank Coalfield, Northern Karoo Basin, South Africa. *South African Journal of Geology,* **106(4):** 249-264.

PLUMSTEAD, E.P. 1963. The influence of plants and environment on the developing animal life of Karoo times. *South African Journal of Science,* **59(5):** 147-152.

PREVEC, R. 2011. A structural re-interpretation and revision of the type material of the glossopterid ovuliferous fructification *Scutum* from South Africa. *Palaeontologia africana,* **46:** 1-19.

RAYNER, R.J. and COVENTRY, M.K. 1985. A *Glossopteris* flora from the Permian of South Africa. *South African Journal of Science,* **81:** 21-32.

08 April 2021

Project No. 19117180 Letter 004

Ms Melissa Hallquist-Waites
Anglo American Inyosi Coal (Pty) Ltd
Supply Chain
Ground Floor Security
55 Marshall Street
Johannesburg

Dear Melissa

ANGLO AMERICAN INYOSI COAL (PTY) LTD: EXEMPTION LETTER – PROPOSED DISCARD FACILITY AT THE ZIBULO OPENCAST OPERATION

Anglo American Inyosi Coal (Pty) Ltd (AAIC) proposes to develop a discard facility at its opencast operations at Zibulo Colliery, situated near Ogies in the Mpumalanga Province. Currently, coal from the opencast operation (and underground operation further south) is transported to the Phola Coal Processing Plant (PCPP). The PCPP is a 50:50 joint venture between AAIC and South32 SA Coal Holdings (Pty) Ltd (South32). The coarse and fine discard produced by PCPP is currently stored in a surface discard facility at South32's Klipspruit Colliery. The facility is reaching capacity (110 ha) by 2021 and an alternative discard facility is required to service the discard requirement of Zibulo Colliery.

It is proposed that a new discard facility be developed over the mined-out opencast pit at Zibulo Colliery.The discard (generated at PCPP) will be transported to the site via a new discard conveyor.

The proposed discard facility will require a waste management licence (WML) in terms of the National Environmental Management Waste Act, 2008 (Act 59 of 2008) (as amended) (NEMWA), an environmental authorisation (EA) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA) and a water use licence (WUL) in terms of the National Water Act, 1998 (Act 36 of 1998) (NWA) (as amended). The WML and EA application will need to be supported by a full environmental impact assessment (EIA) process (scoping and impact assessment phases) in terms of the Environmental Impact Assessment Regulations, 2014 (as amended). The competent authority for the application is the Department of Mineral Resources and Energy (DMRE).

As part of the EIA process, a number of specialist studies are being conducted. The National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA) requires that a heritage and paleontological impact assessment be conducted for proposed developments. Since the proposed discard facility and discard conveyor will be located on disturbed land, an exemption from the requirements of the NHRA to conduct a heritage impact assessment has been compiled by an archaeological consultant.

Please see attached the exemption letter related to the heritage impact assessment.

Your sincerely,

Golder Associates Africa (Pty) Ltd.

Olivia Allen
GOLDER

Dr. Brent Baxter
Principal
GOLDER

Olivia Allen
Environmental Assessment Practitioner

Brent Baxter
Project Director

OA/BB/nbh

Attachments: Heritage impact assessment exemption letter

https://golderassociates.sharepoint.com/sites/104294/project files/7 correspondence/letters/19117180_let004_anglozibulodd_hia_final_08apr21.docx

P.O.BOX73703
LYNNWOOD RIDGE
0040
Tel: 083 459 3091
Fax: 086 695 7247
Email: apac.heritage@gmail.com

APELSER ARCHAEOLOGICAL CONSULTING

Comprehensive and Professional Solutions for all Heritage Related Matters

CK 2006/014630/23 **VAT NO.: 4360226270**

APAC021/07 **2021-04-08**

To: Me. Nokukhanya Khumalo
South African Heritage Resource Agency
P O Box 4637
Cape Town
8000

RE: MOTIVATION FOR EXEMPTION FROM FULL PHASE 1 HERITAGE IMPACT ASSESSMENT – ANGLO-AMERICAN INYOSI COAL (PTY) LTD, ZIBULO DISCARD FACILITY PROJECT

APelser Archaeological Consulting cc (APAC cc) was appointed by Golder Associates Africa (Pty) Ltd to provide a motivation for exemption from a Full Phase 1 HIA for Anglo-American Inyosi Coal's Zibulo Colliery Opencast Operation's Proposed Discard Facility Project.

Background to the Project

APAC cc was appointed by Golder for the above project and to provide Motivation for Exemption from a Full Phase 1 HIA. The Scope of Work included the following:

- Desktop review of the SAHRIS database, historic Phase 1 Heritage assessments conducted within the Zibulo mining rights area, and the draft scoping report for the proposed discard project;
- Drafting and electronic submission of the application for exemption letter to Golder;
- If required, an online meeting via Microsoft TEAMS with the appointed SAHRA case officer.

Anglo American Inyosi Coal (Pty) Ltd (AAIC) proposes to develop a discard facility at its opencast operations at Zibulo Colliery, situated near Ogies in the Mpumalanga Province. The proposed discard facility requires AAIC to submit an application for an Environmental Authorisation and a Waste Management Licence, 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).

As part of the EIA process, AAIC is required to submit a scoping report, an EIA report and an environmental management programme report (EMPr), which describe the environmental impacts of the proposed development and how they will be managed and mitigated.
Golder Associates Africa (Pty) Ltd, an independent environmental assessment practitioner, has been appointed by AAIC to conduct the EIA and associated licensing processes.

Zibulo Colliery produces an annual eight million run of mine (ROM) tonnes of export thermal coal, with seven million tonnes per annum coming from its underground sections and the remaining one million tonnes from its opencast pit. Underground operations incorporate bord and pillar continuous miner methods while the contractor-run opencast pit utilises the truck and shovel mining method.

Currently, coal from the opencast operation (and underground operation further south) is transported to the Phola Coal Processing Plant (PCPP). The PCPP is a 50:50 joint venture between AAIC and South32 SA Coal Holdings (Pty) Ltd (South32). The coarse and fine discard produced by PCPP is currently stored in a surface discard facility at South32's Klipspruit Colliery. The facility is reaching capacity (110 ha) by 2021 and an alternative discard facility is required to service the discard requirement of Zibulo Colliery.

It is proposed that a new discard facility be developed over the mined-out opencast pit at Zibulo Colliery. The discard (generated at PCPP) will be transported to the site via a new discard conveyor. It is proposed that the new conveyor follow the alignment of the existing conveyor linking the South32 Klipspruit extension project to the PCPP. The proposed new conveyor will lie to the immediate north of the existing conveyor and cross the R545 on a dedicated bridge crossing. Soon after the crossing of the R545 the conveyor will turn north to the opencast pit for final discard disposal. The entire extent of the conveyor route is confined to mine property belonging to either South32 or AAIC.

Relevant Legalisation

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

a. Archaeological artefacts, structures and sites older than 100 years;
b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography;
c. Objects of decorative and visual arts;
d. Military objects, structures and sites older than 75 years;
e. Historical objects, structures and sites older than 60 years;
f. Proclaimed heritage sites;
g. Grave yards and graves older than 60 years;
h. Meteorites and fossils; and
i. Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

a. Places, buildings, structures and equipment of cultural significance;
b. Places to which oral traditions are attached or which are associated with living heritage;
c. Historical settlements and townscapes;
d. Landscapes and features of cultural significance;
e. Geological sites of scientific or cultural importance;
f. Sites of Archaeological and palaeontological importance;
g. Graves and burial grounds;
h. Sites of significance relating to the history of slavery; and
i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.).

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. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. According to Section 38 (1) of the Act an HIA must be done under the following circumstances:

a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length.
b. The construction of a bridge or similar structure exceeding 50m in length.
c. Any development or other activity that will change the character of a site and exceed 5 000m^2 or involve three or more existing erven or subdivisions thereof.
d. Re-zoning of a site exceeding 10 000m^2.
e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

Results of Desktop Heritage Review

Zibulo Colliery (opencast operation) is situated approximately 25 km south-west of eMalahleni in the Mpumalanga Province. The mine falls within the Wilge River Catchment, which consists of quaternary sub-catchment B20G of the Limpopo-Olifants primary drainage region. The study area drains into Saalklapspruit via one of its tributaries, which in turn drains into the Wilge River. The N12 highway is situated directly north of the site, and the R545 runs along the western boundary of the site.

The study area is located on portions of the farms Ogiesfontein 4IS & Klipfontein 3IS, in the eMalahleni Magisterial district and Nkangala District Municipality of Mpumalanga. It is situated 2km north of Ogies and, 25km south-west of eMalahleni (Witbank).

The area would have been used in the past (pre-mining) mainly for agricultural purposes as is visible on aerial images (Google Earth) of the study area. Extensive mining activities over the last 15 or so years have had a major impact on the area, with little of the original natural landscape still intact. As a result of previous farming activities and the recent mining operations if any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance did exist here, it would have been extensively disturbed or destroyed.

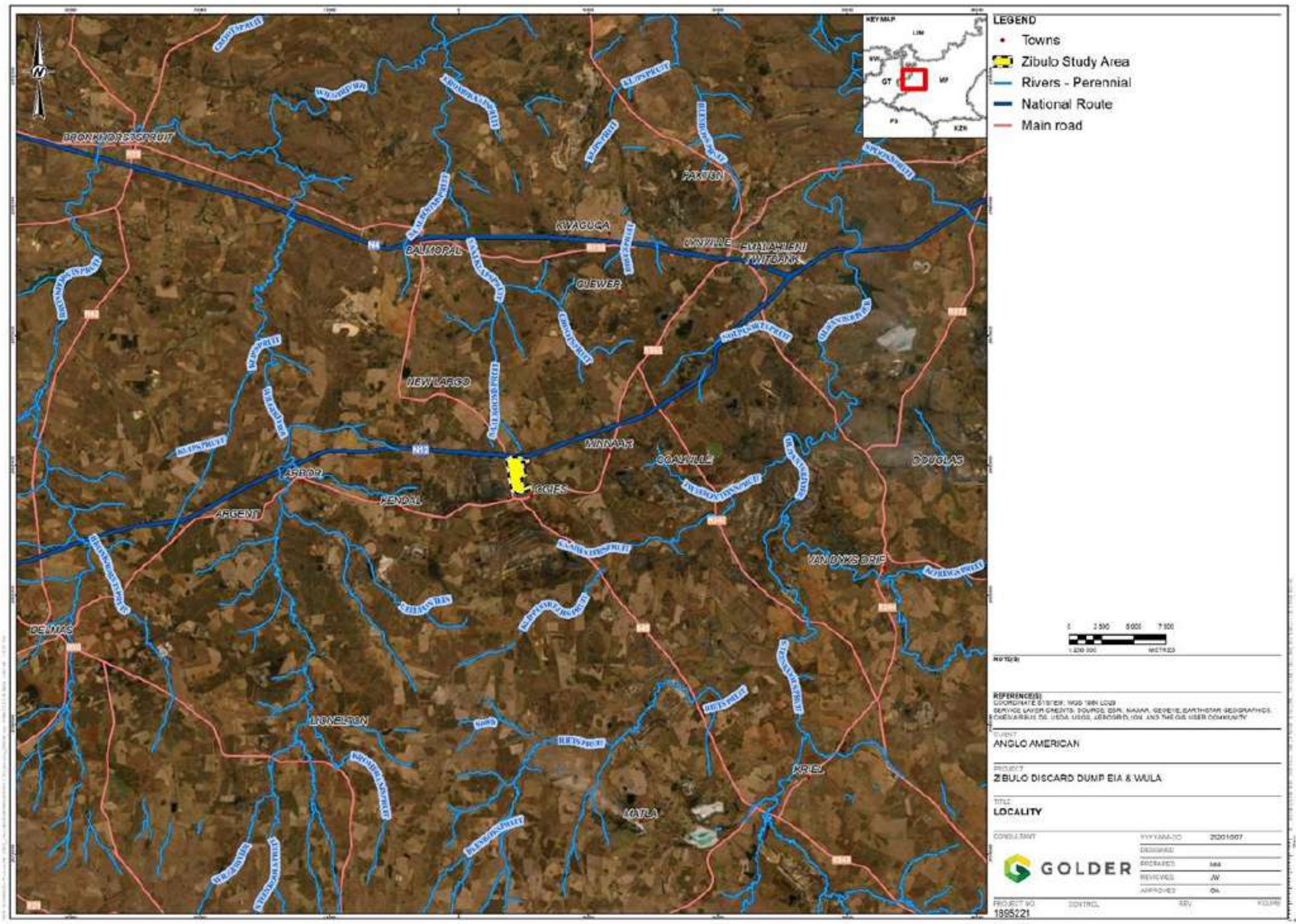


Figure 1: General Location Map (courtesy Golder Associates Africa (Pty) Ltd.).

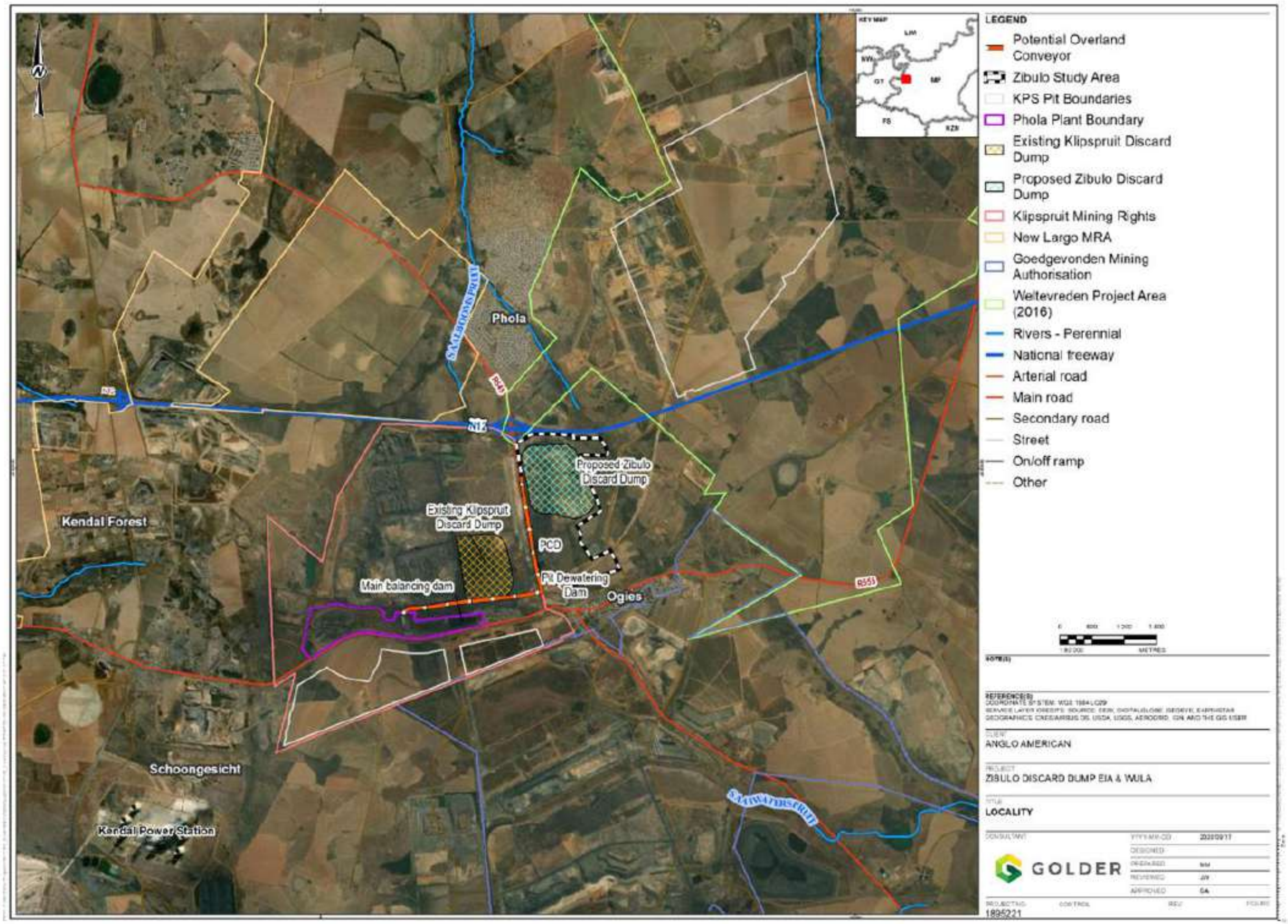


Figure 2: Locality of the proposed discard facility and proposed conveyor route (courtesy Golder Associates Africa (Pty) Ltd.)

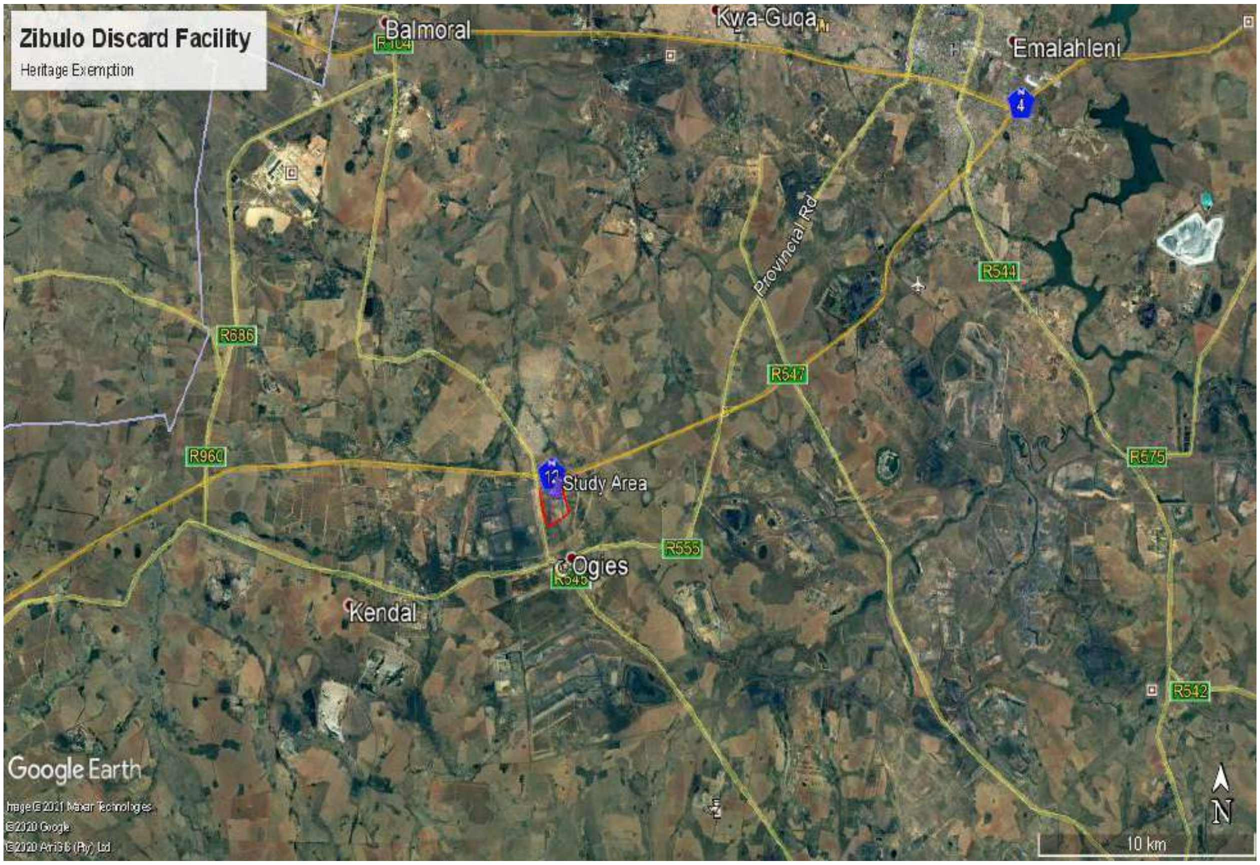


Figure 3: General location of study area (Google Earth 2021).

Figure 4: Closer view of the study and mining area where the Zibulo Discard Facility Project is proposed (Google Earth 2021).

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools. In South Africa the Stone Age can be divided basically into three periods. It is however important to note that dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age (Lombard et.al 2012) is as follows:

Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago
Middle Stone Age (MSA) less than 300 000 – 20 000 years ago
Later Stone Age (LSA) 40 000 years ago – 2000 years ago

It should also be noted that these dates are not a neat fit because of variability and overlapping ages between sites (Lombard et.al 2012: 125).

The closest known Stone Age occurrences are Late Stone Age sites at Carolina and Badplaas, and rock painting sites close to Machadodorp, Badplaas and Carolina. Rock art is also found close to the Olifants River and at the Rietspruit near Witbank (eMalahleni) [Bergh 1999: 4-5]. Some open-air surface sites with scatters of Stone Age artefacts were identified by Matakoma & CRM Africa at the Impunzi Division of Duiker Mining in 2000 (p.4), but these sites are not located close to the current expansion study area.

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artefacts. In South Africa it can be divided in two separate phases (Bergh 1999: 96-98), namely:

Early Iron Age (EIA) 200 – 1000 A.D.
Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

Early Iron Age (EIA) 250 – 900 A.D.
Middle Iron Age (MIA) 900 – 1300 A.D.
Late Iron Age (LIA) 1300 – 1840 A.D.

Based on Tom Huffman's research LIA sites, features or material that could present in the larger area will be related to the Ntsuanatsatsi facies of the Urewe Tradition, dating to between AD1450 and AD1650 (Huffman 2007: 167) or the Makgwareng facies of the same dating to between AD1700 & AD1820 (Huffman 2007: 179). According to De Jong no Iron Age sites or features were identified during an assessment of the Goedgevonden Mining area that is situated in close proximity to the Zibulo study area and if any did exist here in the past recent farming and mining activities would have disturbed or destroyed any traces (De Jong 2007: 20). Again, during their 2000 Phase HIA for Duiker Mining, Matakoma & CRM Africa did identify some remnants of LIA sites in the general area (2000: p.4).

No known Iron Age sites, features or cultural material are known to exist in the specific study area.

Historians agree that the earliest Africans to inhabit in the Lowveld in Mpumalanga were of Sotho, or more particularly Koni-origin. According to Bergh no signs of major Stone Age or Iron Age terrains are present in the vicinity of the Ogies area. The Ogies area was vacant of any settlement until the advent of the nineteenth century, when the Phuthing Tribe was prominent in the area to the north thereof (Celliers 2015: 11). The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. Mzilikazi and his raiders had moved from the Northern Nguni area to the area north of the Vaal River by 1821. It has been recorded that the Ndebeles first attacked the Phuthing tribe, which in turn migrated to the south of the Vaal River and joined groups of Southern Sotho speakers. The Phuthing and Southern Sotho tribes moved westward and northward and started raiding Tswana communities in the surrounding area. The Phuthing were commanded first by Chief Tshane, and later Ratsebe. As the Phuthing under Ratsebe moved eastwards along the Vaal River, they collided with Mzilikazi's Ndebele once more. The Phuthing and other raiding groups were finally taken captive in 1823 by Mzilikazi's men (Celliers 2015: 10-11).

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa – some as early as in the 1720's. One such an adventurer was Robert Scoon, who formed part of a group of Scottish travellers and traders who had travelled the northern provinces of South Africa in the late 1820s and early 1830s. Scoon had gone on two long expeditions in the late 1820s and once again ventured eastward andnorthward of Pretoria in 1836. During the latter journey, he passed by the area where Ogies is located today (Celliers 2015: 11). By the late 1820's, a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. As can be expected, the movement of whites into the Northern provinces would have a significant impact on the black farmer - herders who populated the land. By 1860, the population of whites in the central Transvaal was already very dense and the administrative machinery of their leaders was firmly in place. Many of the policies that would later be entrenched as legislation during the period of apartheid had already been developed (Celliers 2015: 11-12).

The discovery of diamonds and gold in the Northern provinces had very important consequences for South Africa. After the discovery of these resources, the British, who at the time had colonized the Cape and Natal, had intensions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which was one of the most turbulent times in South Africa's history. During the British march into the Transvaal between February and September 1900, several troops passed by the area where Ogies is situated today. The battalions of Lieutenant Generals J. French, R. Pole-Carew and F. Roberts all travelled close by the Witbank area and through Middelburg. A railway line ran along this route at the time (Bergh, 1999: 51). At the time of the War, two railway stations were located in the vicinity of the Witbank/Ogies area, and close to each a black concentration camp had been established. At Middelburg, about 20 kilometers to the east of Witbank, one white and one black concentration camp was also set up. No skirmishes took place in the direct vicinity of the Ogies area (Celliers 2015: 12-13).

Ogies is a small town situated 27 km south of Witbank in the Mpumalanga province. It is surrounded by coal-mines. The name is derived from the farm Oogiesfontein (fountain with many "eyes") on which the railway station was built. According to Celliers the name of the town was originally misspelt as Oogies, but corrected by the Place Names Commission in 1939. Ogies is on the link railway from Springs to Witbank and is the junction for the Broodsnyersplaas, where a large power station was erected (Celliers 2015: 17). Celliers also looked at historical maps of the general and specific area during his 2015 assessment. Since the mid 1800's up until the present, South Africa had been subdivided into various districts. Since 1945, the area where Ogies is located formed part of the Lydenburg district. As of 1872, the farm area was located within the Middelburg district. The Witbank district was however proclaimed in 1925, and the farms were located in this area. As of 1977 the properties fell under the jurisdiction of the Witbank Magisterial Area. This was still the case by 1994 (Celliers 2015: 12-17).

The proposed Zibulo Discard Facility Project study area for which APAC cc was appointed to provide a Motivation from Full Phase 1 HIA for has been extensively impacted by past and recent on-going mining operations. Prior to that, agricultural activities were also occurring on a large scale. This is clear from older aerial images of the areas showing the impact of these activities. In 2006 the area still had a largely agricultural landscape (**See Figure 5 below**). By 2010 this had largely changed to mining with the impacts of these activities very clear (**See Figure 6 below**). The possibility of any sites, features or material of any cultural heritage (archaeological and/or historical) origin or significance being present here is therefore highly unlikely. A 2002 HIA by Dr. Johnny van Schalkwyk (for the Zondgasfontein Mining Development as part of the original Zibulo Mine EIA) found a number of cemeteries and grave sites in the larger area (Van Schalkwyk 2002:7; 10-12), but none are located close to the Zibulo Colliery study and development area.

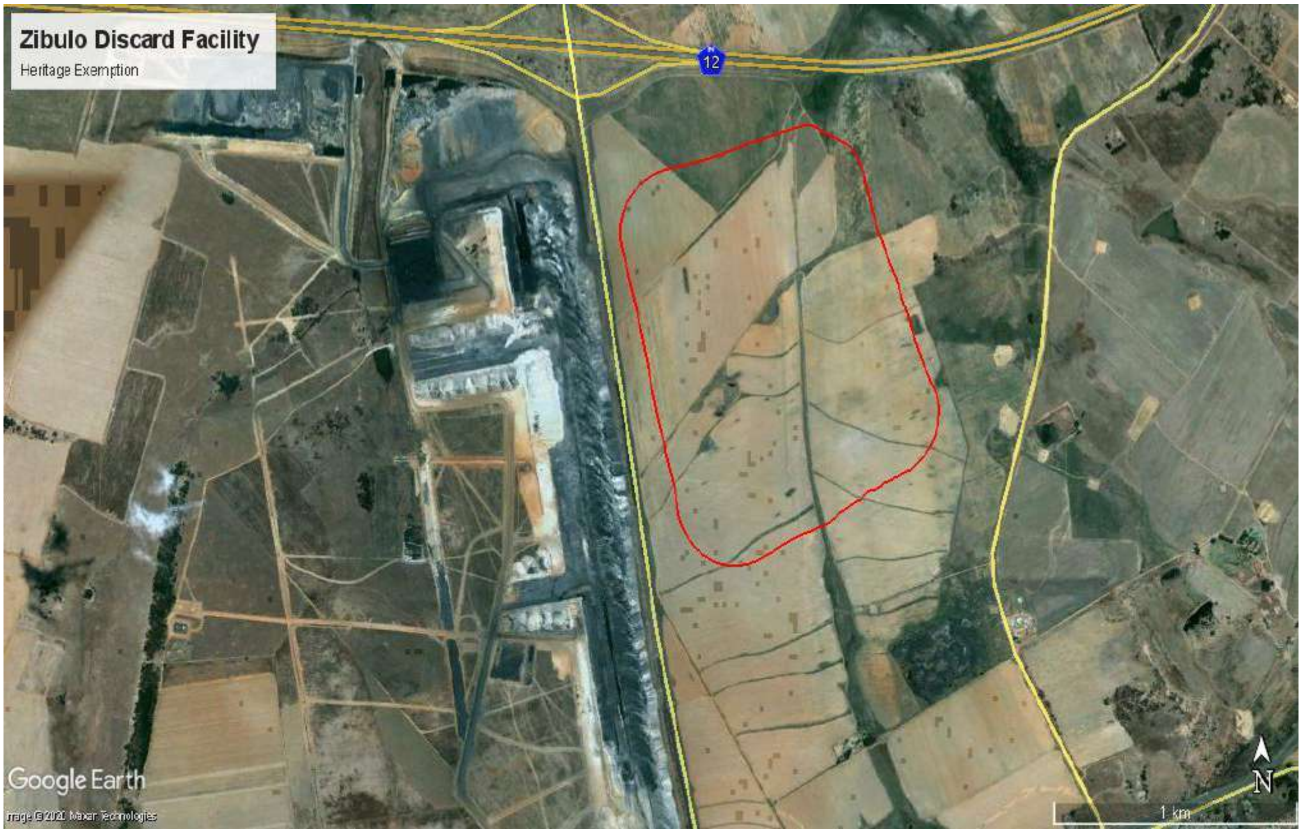


Figure 5: Closer view of the Zibulo Colliery study area in 2006. Note the extensive agricultural fields (Google Earth 2021).

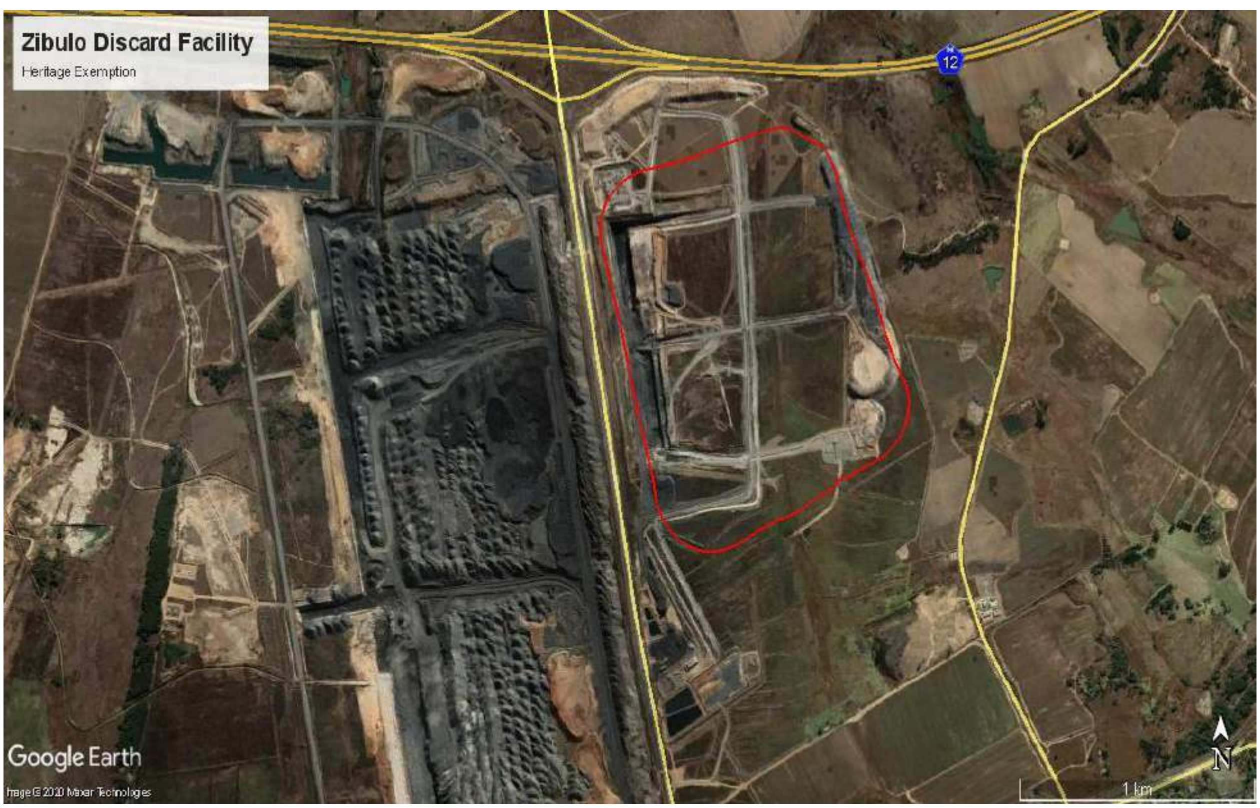


Figure 6: By 2010 the agricultural nature of the study area had largely been altered through mining activities (Google Earth 2021).

Based on these aerial images and the heritage desktop study, it is therefore deemed highly unlikely that any sites, features or material of cultural heritage (archaeological and/or historical) origin might exist in the study and proposed development area. Recent historical activities (agricultural and later and current mining operations) would have impacted extensively on any if they did exist here in the past and would have disturbed or destroyed them to a large degree. However, known archaeological and historical sites, features and material have been identified in the larger geographical area and this needs to be taken into consideration during any actions related to the proposed development.

It is therefore recommended that Exemption from a Full Phase 1 Heritage Impact Assessment (HIA) for the proposed Zibulo Colliery Opencast Operations' Discard Facility Project be granted to the applicants taking into consideration the following:

The subterranean nature of cultural heritage (archaeological and/or historical) resources must always be kept in mind. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward. This could include previously unknown and unmarked graves, as well as fossil material.

Should there be any questions or comments on the contents of this document please contact the author as soon as possible.

Kind regards

Anton Pelser

References

1. General & Closer Views of Study Area location: Google Earth 2021.

2. Locality Maps: Courtesy Golder Associates Africa (Pty) Ltd.

3. Bergh, J.S. (red.). 1999. **Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies**. Pretoria: J.L. van Schaik.

4. Celliers, J.P. 2015. **Phase 1 Archaeological Impact and Heritage Assessment on portions of the farms Kleinzuikerboschplaat 5 IS, Klipfontein 3 IS and Zondagsvlei 9 IS, in respect of the proposed construction of a 88 kV Eskom Powerline, Ogies, Mpumalanga Province**. Unpublished Report Kudzala Antiquity cc. For: Royal Haskoning DHV. May 2015.

5. De Jong, R.C. 2007. **ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT: PROPOSED NEW GOEDGEVONDEN COLLIERY EXPANSION PROJECT ON THE FARMS GOEDGEVONDEN 10 IS, ZAAIWATER 11 IS AND KLEINZUIKERBOSCHPLAAT 5 IS NEAR OGIES, EMALAHLENI LOCAL MUNICIPALITY, MPUMALANGA**. Unpublished Report Cultmatrix cc. For: Jacana Environmentals cc. June 2007.

6. Golder Associates Africa (Pty) Ltd. 2020. **Draft Scoping Report for the Proposed Discard Facility at the Zibulo Colliery Opencast Operation Anglo American Inyosi Coal (Pty) Ltd.** Unpublished Report for the Department of Mineral Resources and Energy. October 2020.

7. Huffman, T.N. 2007. **Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa**. Scotsville: University of KwaZulu-Natal Press.

8. Steyn, H., P.Birkholtz, A.Salomon & W.Fourie. **Phase 1 Archaeological Survey of the Impunzi Division of Duiker Mining – Witbank/Ogies Area. Unpublished Report**: Matakoma & CRM Africa. For: Duiker Mining. August 2000.

9. Van Schalkwyk, J.A. 2002. **A survey of cultural resources for the Zondagsfontein mining development, Witbank District, Mpumalanga Province**. Unpublished Report National Cultural History Museum. 2002KH28. For: Oryx Environmental. August 2002.

10. Republic of South Africa. 1999. National Heritage Resources Act (No 25 of 1999). Pretoria: the Government Printer.

11. Republic of South Africa. 1998. National Environmental Management Act (no 107 of 1998). Pretoria: The Government Printer.

REPORT

Socio-economic Impact Assessment for the proposed Zibulo Colliery Discard Facility

Anglo American Inyosi Coal (Pty) Ltd

Submitted to:

Ms Melissa Hallquist-Waites
Anglo American Coal
Supply Chain
Ground floor security
55 Marshall Street
Johannesburg

Submitted by:

Golder Associates Africa (Pty) Ltd.
Building 1, Maxwell Office Park,

+27 11 254 4800

19117180-340179-19

February 2021

Distribution List

1 x electronic copy to Anglo American Inyosi Coal (Pty) Ltd

1 x electronic copy to projectsreports@golder.co.za

1 x electronic copy to SharePoint site

Declaration of Independence by Specialist

I, Brian Magongoa, declare that I –

- Act as the independent specialist for the undertaking of a specialist section for the proposed Zibulo Colliery Discard Facility Project;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed;
- Do not have nor will have a vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- Undertake to disclose, to the competent authority, any information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document

Table of Contents

TABLES

FIGURES

APPENDICES

APPENDIX A
Details of Specialist and Declaration of Interest

APPENDIX B
Impact Rating Methodology

APPENDIX C
Social Baseline of the Project Area

APPENDIX D
Document Limitations

ABBREVIATION/ACRONYMS

Acronym or Abbreviation	Full Term
AAIC	Anglo American Inyosi Coal
ANC	African National Congress
CBD	Central Business District
DA	Democratic Alliance
EA	Environmental Authorisation
ELM	eMalahleni Local Municipality
EIA	Environmental Impact Assessment
EWRP	eMalahleni Water Reclamation Plant
GDP	Gross Domestic Product
GVA	Gross Value Added
HDSA	Historically Disadvantaged South Africans
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
MCC	Members of the Mayoral Committee
MP	Mpumalanga Province
MPRDA	Mineral and Petroleum Resources Development Act
NDM	Nkangala District Municipality
NEMA	National Environmental Management Act
NEMWA	National Environmental Management Waste Act
NWA	National Water Act
PCPP	Phola Coal Processing Plant
SIA	Social Impact Assessment
SLP	Social and Labour Plan
VIP	Ventilation Improved Pit
WML	Waste Management Licence
WUL	Water Use Licence

1.0 INTRODUCTION

1.1 Background

Anglo American Inyosi Coal (Pty) Ltd (AAIC) proposes to develop a discard facility at its opencast operations at Zibulo Colliery, situated near Ogies in the Mpumalanga Province. The coarse and fine discard produced by Phola Coal Processing Plant (PCPP) is currently stored in a surface discard facility at South32's Klipspruit Colliery. The facility is reaching capacity (110 ha) by 2021, and an alternative discard facility is required to service the discard requirement of Zibulo Colliery. It is proposed that a new discard facility be developed over the mined-out opencast pit at Zibulo Colliery. The discard (generated at PCPP) will be transported to the site via a new discard conveyor.

The proposed discard facility will require a waste management licence (WML) in terms of the National Environmental Management Waste Act, 2008 (Act 59 of 2008)[1] (as amended) (NEMWA), an environmental authorisation (EA) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA), and a water use licence (WUL) in terms of the National Water Act, 1998 (Act 36 of 1998) (as amended) (NWA). The WML and EA application will need to be supported by a full environmental impact assessment (EIA) process (scoping and impact assessment phases) in terms of the Environmental Impact Assessment Regulations, 2014 (as amended). As part of this process, there is a need to undertake a social impact assessment (SIA) for the proposed expansion.

The details of the SIA specialist and declaration of interest are provided in APPENDIX A

In the SIA context, it is essential to note that the opencast mining operation is permitted. No private land or undeveloped land will be affected by the proposed discard facility. Hence, the focus of this SIA is only on the proposed discard facility and the associated conveyor. Please refer to Section 2.2 for more information on the proposed project.

The following sections outline the SIA and related aspects.

1.2 Terms of reference

The terms of reference for this SIA are to:

- Describe the socio-economic conditions of the receiving environment.
- Identify, describe, and rate the significance of the socio-economic implications that may result from the proposed project.
- Recommend feasible (practical and cost-effective) mitigation measures to enhance positive impacts and reduce negative impacts.

1.3 South African legislative requirements

This section provides an overview of the requirements of the NEMA, and any other South African acts and regulations applicable to the assessment.

1.3.1 National Environmental Management Act, 1998

According to NEMA, sustainable development requires integrating social, economic, and environmental factors to plan, implement, and evaluate decisions to ensure that development serves present and future generations. NEMA also sets out the process for public participation.

[1] (Parliament of the Republic of South Africa 2009)

1.3.2 Constitution of the Republic of South Africa, 1996

Table 1 shows the objectives and development duties of municipalities, including all South Africans' legal rights as per the Constitution of the Republic of South Africa.[2]

Table 1: Aspects of the South African Constitution applicable to the SIA

Regulation	Description
Section 25 of the Constitution	"(1) No one may be deprived of property except in terms of the law of general application, and no law may permit arbitrary deprivation of property; (2) Property may be expropriated only in terms of general application – (a) for a public purpose or in the public interest; and (b) subject to compensation, the amount of which and the time and manner of payment of which have either been agreed by those affected or decided or approved by a court; and (6) A person or community whose tenure of land is legally insecure as a result of past racially discriminatory laws or practices is entitled, to the extent provided by an act of Parliament, either to tenure which is legally secure or to comparable redress."
Section 26 of the Constitution	(1) Everyone has the right to have access to adequate housing; and (3) No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the circumstances. No legislation may permit arbitrary evictions."

1.3.3 The South African Mining Charter

The Broad-Based Socio-Economic Empowerment Charter for the mining and minerals industry, 2018 (Mining Charter) has a strong focus on promoting equitable access to the nation's mineral resources to all South African people. The Mining Charter further emphasises the requirement to expand opportunities substantially and meaningfully for historically disadvantaged South Africans (HDSA) to enter the mining and minerals industry and benefit from exploiting the nation's mineral resources. The Mining Charter emphasise the need to utilise and expand the existing skills base to empower HDSA and serve the community. Promoting the advancement of mine communities' social and economic welfare and major labour sending areas and beneficiation of South Africa's mineral commodities forms a core aspect of the Mining Charter. All of this is aimed at promoting the sustainable development and growth of the mining industry.

1.3.4 National Spatial Development Perspective

According to the National Spatial Development Perspective, spatial development should, where appropriate, accommodate and promote private economic ventures, which can aid sustainable economic growth, relieve poverty, increase social investment, and improve service delivery. Consequently, municipal-level spatial planning has been considered where possible.

2.0 PROJECT LOCATION AND DESCRIPTION

This section provides a summary of the project location and description. The proximity to the closest towns will also be indicated for both aspects.

[2] (Parliament of the Republic of South Africa 1996)

2.1 Project location

Zibulo Colliery (opencast operation) is situated approximately 25 km south-west of eMalahleni. The study area falls within the eMalahleni Local Municipality (ELM), which forms part of the Nkangala District Municipality in the Mpumalanga Province.

The N12 highway is situated directly north of the site, and the R545 runs along the western boundary of the site. The study area lies some 2 km to the north-west of Ogies Town and a bit more than 1 km to the south-east of Phola Town.

To the east of the project site lies the Klipspruit Expansion Project site. To the west of the project site is the existing Klipspruit opencast operations. Between the N12 and Phola there is a recently developed small opencast coal pit.

The project is located on the farms Oogiesfontein 4 IS, and Klipfontein 3 IS. Refer to Figure 1 (on page 4) for the project's location and associated study area.

2.2 Project description

The current Zibulo Opencast pit will develop in a southerly direction once the current footprint has been mined out. When considering the proposed discard facility, it is important to contextualise that the open-air operation was to be rehabilitated five years from now. The discard facility's development will mean that the site will remain operational and virtually a brownfield site for the underground mine's remaining operational life. The proposed project entails developing a new discard facility. However, such a facility will require transportation of discard from the source. It is intended to transport this discard with a new conveyor. The following sections provide a broad description of these two aspects.

2.2.1 Proposed discard facility

The proposed project entails developing a new discard facility over the mined-out opencast pit at Zibulo Colliery. The discard facility will have a life of approximately fifteen years. The discard facility maximum height will be 27.5 m above the pit’s rehabilitated landform. The facility will extend over an area of roughly 150 ha, situated over the rehabilitated backfilled pit. The rehabilitation of the discard facility will involve establishing a soil cover installed during the ongoing rehabilitation process. Soil for the cover will be sourced from on-site. The cover will contain a growing medium for vegetation establishment to limit erosion. The cover will aim to limit seepage into the discard facility and the covered open cast pit. Seepage water from discharges will be managed through the existing mine water management system. Excess mine water intercepted in the pit is currently sent to the eMalahleni Water Reclamation Plant (EWRP) for treatment.

2.2.2 Proposed new conveyor

It is intended to transport the discard from the PCPP to the site via a new conveyor. The proposed conveyor will run alongside the existing conveyor servicing the Klipspruit Expansion Project and then to the opencast pit across the Zibulo property. The proposed new conveyor will lie to the immediate north of the existing conveyor and cross the R545 on a dedicated bridge crossing. Soon after crossing the R545, the conveyor will turn north to the opencast pit for final discard disposal.

In reference to Figure 1, the conveyor will, at its closest, pass about 550 metres to the north-west of the westmost portion of Ogies Town and some 1.4 km south of the southernmost part of Phola Town. The entire extent of the conveyor route is confined to mine property belonging to either South32 or AAIC.

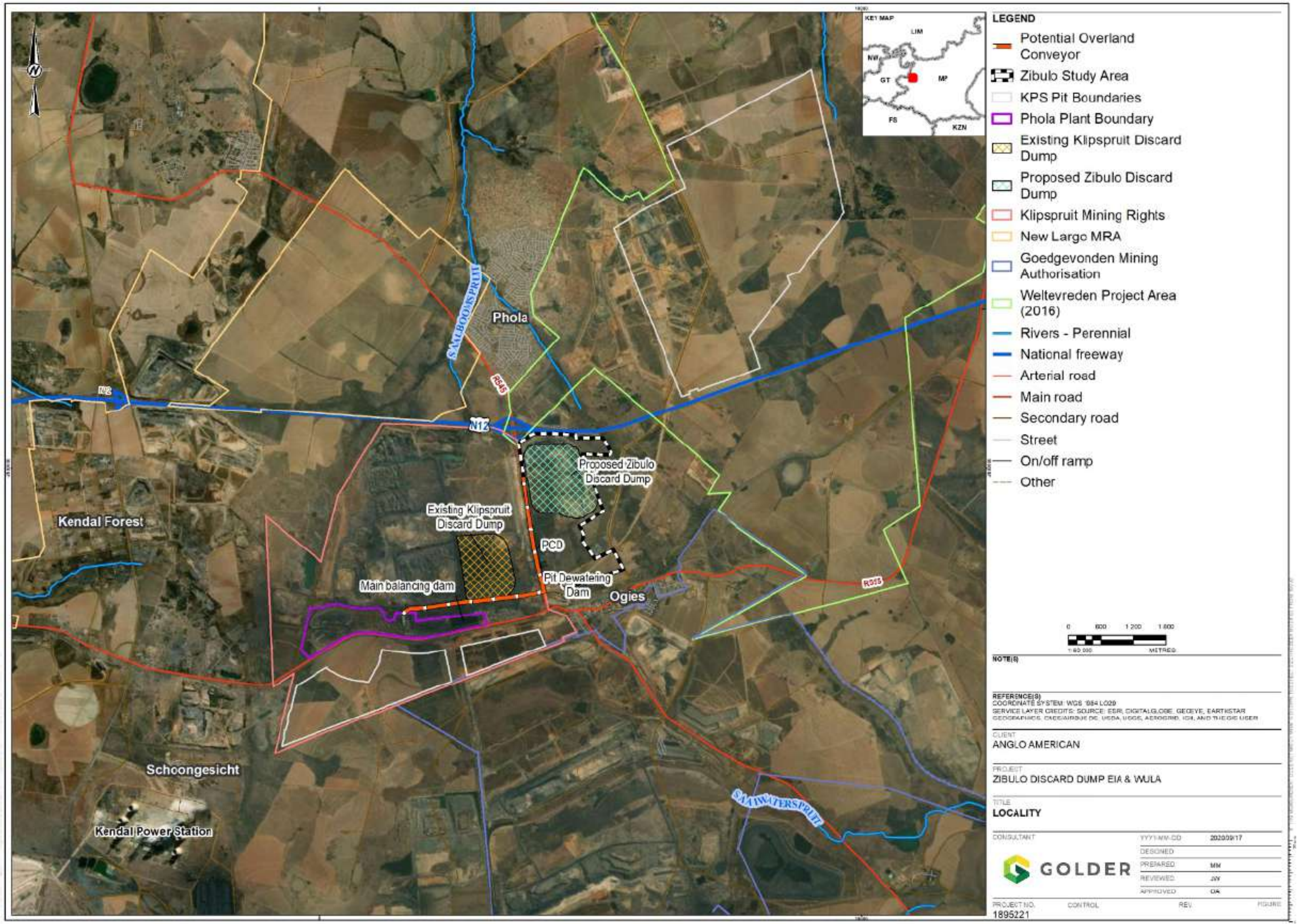


Figure 1: Proposed expansion area

2.2.3 Specific project-related activities

The specific activities associated with the proposed project will be:

- Construction and operation of the proposed discard conveyor.
- Stockpiling of discard material before placement onto the spoils.
- Deposition of discard onto the spoils (trucking, dozing and compaction).
- Construction and operation of a stormwater control system to ensure separation of clean and dirty water.
- Continuation of pit water abstraction system to intercept seepage from the discard for treatment at the EWRP.
- Application of soil cover during ongoing rehabilitation.

3.0 ASSESSMENT APPROACH

The SIA approach consists of three broad aspects. Firstly, information is gathered. Based on the information and technical experience, the impacts are identified. Lastly, the impacts are assessed and rated. Appropriate impact avoidance or mitigation measures are then developed. This section describes the overall approach.

3.1 Information gathering

The overall assessment methodology consisted of a desktop review of available information and specialist reports. Issues and concerns raised during the stakeholder engagement process were also considered[3].

3.1.1 Desktop review

Golder reviewed available documents to obtain information regarding the socio-economic conditions in the study area. The documents reviewed (in alphabetical order) include the following:

- Golder Associates Africa. 2021. Atmospheric Impact Report for the Zibulo Colliery Discard Dump Facility.
- Golder Associates Africa: Comment and Response Report for the Development of a Discard Facility at the Zibulo Colliery Opencast Operation.
- Golder Associates Africa: Hydrology/ Hydrogeology Report for the Discard Facility at Zibulo Opencast Operation.
- Golder Associates Africa: Visual Impact Assessment for the Proposed Zibulo Colliery Discard Facility.
- Integrated Development Plans (IDP) for the Nkangala District Municipality and eMalahleni Local Municipality.
- Maps and satellite imagery.
- Mpumalanga Community Survey, 2016.

3.1.2 Issues and concerns raised during the stakeholder engagement process

The stakeholder engagement process was initiated on 30 October 2020 with the project notification. Stakeholders were invited to participate in the EIA directly and by means of a newspaper advertisement in the Witbank News. Site notices were also placed. A Focus Group Meeting was convened on 01 December 2020 with the eMalahleni Local Municipality. A one to one meeting was also held with an adjacent farmer. The

[3] As reflected in the Zibulo comments and response report.

purpose of the meetings were to share information about the proposed project and associated permitting process (WML, EA and WUL application) and for stakeholders to ask questions, raise issues of concern, and contribute comments and suggestions for consideration during the environmental assessment and permitting process. The draft scoping report was made available for public review from Friday 30 October to Friday 04 December 2020. The comments received and issues raised during the 30-day comment period were captured in a Comment and Response Report.[4] A few issues were raised during this process.

- The South African National Road Agency (SANRAL) declared that the discard facility's toe be located at least 20m from the declare N12 road reserve boundary.
- A farmer expressed his concern about whether his fields would be affected by the proposed discard facility project. It was noted that the proposed discard facility and associated infrastructure would be located within the mined-out opencast pit at Zibulo.
- The eMalahleni LED and IDP Managers noted the project.

3.2 Identification of impacts

In considering the potential social impacts of the proposed discard facility, it is important to remember that the opencast mining operation *per se* is permitted and in operation. Thus, the current project entails only developing a discard facility on the surface of the rehabilitated opencast and the connection of that discard facility to the existing PCPP via a conveyor. The conveyor is proposed to run alongside the existing conveyor servicing the Klipspruit Expansion Project, and then running to the opencast pit across the Zibulo property. No private land will be affected. Similarly, there will be no undeveloped land affected by the proposed development. The entire project footprint is made up of land already affected by mining or mining infrastructure.

Based on the desktop review, stakeholder feedback and expert knowledge, impacts were identified, and the impacts rated A pre- and post-mitigation rating was done. The construction, operation, and closure phases of the project were considered (see Section 5.0).

The impacts identified relate largely to:

- Nuisance factors such as dust, noise and visual pollution.
- Job security as current employees will be utilised to build and operate the discard facility.
- Potential impacts on water users were also identified.

3.3 Rating of impacts

The significance of identified impacts was determined using an approach based on the terminology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998. In summary, this approach considers the occurrence and severity of the impact to determine the significance of the impact. The occurrence and severity are further subdivided, as indicated in Table 2.

Table 2: Impact severity and occurrence

Severity		Occurrence	
Scale/extent of the impact	Magnitude of impact	Duration of occurrence	Probability of occurrence

[4] (Golder Associates Africa 2020b)

The significance of the various impacts is measured in significance points. Significance points are calculated as follows:

Significance Points= (scale of the impact + magnitude of the impact + duration of the impacts) x probability.

The respective number of significance points indicate an environmental significance rating, ranging from "minor" to "low", "moderate", "high", and "very high". Impacts can be positive or adverse. Please refer to APPENDIX A (on page 24) for a detailed description of the impact rating methodology.

4.0 SOCIAL BASELINE

This section summarises the district and local level social-economic environment of the area in which Zibulo Colliery is located. Please refer to APPENDIX C on page 22 for more information on the social baseline.

4.1 Nkangala District Municipality[5]

In 2016, Nkangala district municipality (NDM) was the most populous district municipality with a total population of 1.4 million. The NDM had an annual growth rate of 2.27% between 2011 and 2016. The 2016 population density was 84.9 people per km^2, growing by 2.16% per annum. The NDM had 404 000 households in 2016.

The number of people within matric only increased from 161,000 to 271,000. The number of people with matric and a certificate/diploma increased by an average annual rate of 5.38%, with the number of people with matric and a bachelor's degree increasing by an average annual rate of 7.55%. Overall improvement in education level is visible with an increase in the number of people with matric or higher education.

The NDM's economy is made up of various industries. In 2016, the mining sector was reported to be the largest within NDM, accounting for R 41.1 billion (37.3%) of the total Gross Value Added[6] in the district municipality's economy. Of interest is that the agriculture sector is the smallest contributor at R 2.18 billion or 1.98% of the total GVA

In 2016, 38.44% of households had piped water inside the dwelling, 41.80% had piped water inside the yard, and 7.86% had no formal piped water. NDM was reported to have a total number of 221 000 flush toilets (54.65% of total households), 56 400 Ventilation Improved Pit (VIP) (13.96% of total households) and 114 000 pit latrines (28.16% of total households). Some 49.33% of households had access to weekly refuse removal services, 2.2% had their refuse removed less often than weekly, and 37.70% did not have access to formal refuse removal services.

Some 86.3% of households had electricity for lighting and other purposes. The rest (11.60%) did not have access to electricity.

4.2 eMalahleni Local Municipality[7]

The Zibulo Colliery falls within the ELM. The proposed discard facility is within the footprint of the Zibulo Colliery. The Klipspruit Colliery is located within Ward 30 of the ELM.

In 2016, the ELM had an estimated population of 455 228 people. From 2011 to 2016, the population of ELM increased by 3.2%. The total number of ELM households has increased from 119 874 in 2011 to 150 420 in 2016.

[5] (Statistics South Africa 2018; Nkangala District Municipality 2020)

[6] The GRA provides a sector breakdown, where each sector is measured in terms of its value added produced in the local economy.

[7] (Statistics South Africa 2018; eMalahleni Local Municipality 2021b)

The male gender in ELM constitutes approximately 53% of the total population, while the female gender constitutes 47%. Over 65% of the population belonging to the Black African group and the most spoken language is isiZulu and Southern Ndebele.

The number of grade 12 graduates improved from 117 021 in 2011 to 146 952, increasing 25.6% over the relevant period.

In 2011, 138548 people in ELM were employed either by the formal and informal sector. Apart from the formal and informal sector as the channels for sourcing income, other income sources within the ELM include social services grants.

In 2016, the ELM contributed 20.9% to the Mpumalanga economy. From 1996 to 2016, ELM demonstrated an average annual economic growth of 2.4%. Mining is a very significant economic sector for the ELM. Mining has also caused a major spatial development constraint due to shallow undermining, especially in the central, northern, and southern portions of eMalahleni. There are various industrial areas in the ELM, mostly situated within or around eMalahleni.

The freeways that converge on eMalahleni town include the N4 and the N12. The N12 starts at eMalahleni, and the N4 proceeds to Nelspruit and Maputo. Running parallel to the N4 is a rail line that connects Gauteng through eMalahleni to Maputo. This significant rail and road infrastructure have been identified as part of a Southern African initiative to connect Walvis Bay (on the west coast of Africa) and Maputo (on the east coast of Africa) called the Maputo Corridor.

More than 90% of the households in the ELM has access to piped water inside the dwellings. The ELM functions as a water service authority and water service provider. The department is responsible for providing potable water and supplying raw water to all industrial areas within the municipality. The water network has 950km of pipelines, with large components still asbestos pipes.

ELM was reported to be the municipality with the highest number of flush toilets within the NDM. ELM is also the municipality with the highest number of households served by formal weekly refuse removal services.

The number of households without electricity in ELM has increased over the years from 2011 to 2016.

Crime is evident in ELM, and it is on the increase. Vandalism and "strip"-mining of metals and copper are also causing concern.

The project area is close to the town of Ogies, with the highest maize production in the maize triangle. The Ogies station handles a substantial portion of the country's freight. The town also functions as a service centre for farmers, with several service industries and cooperatives focusing specifically on the agricultural sector. The township of Phola is located north Ogies. Most of the residents of Ogies and Phola are employed at the mines and the Kendal Power Station. Ogies has developed in a linear pattern along two main roads and a railway line, namely the P29-1 and adjacent railway line and the R545. The general maintenance of the public spaces (road reserves, open spaces, roads etc.) in the town is very poor. ELM is the point of entry into Mpumalanga from Gauteng.

5.0 IMPACT ASSESSMENT AND RECOMMENDED MITIGATION MEASURES

In considering the potential social impacts of the proposed discard facility development project, it is essential to understand that:

- The opencast mining operation is permitted and in operation.

- The opencast component of the Zibulo Colliery was due to be rehabilitated within the next five years. The discard facility's development on the site will mean that the site now remains operational for the underground mine's remaining life.
- The entire project footprint is made up of land already affected by mining or mining infrastructure. Thus, the project site reflects a brownfields footprint and is mostly surrounded by other mining developments.
- No undeveloped land will be affected by the proposed development.
- No private land will be affected. The proposed discard facility will be located over the mined-out opencast pit at Zibulo Colliery. The associated conveyor is proposed to run alongside the existing conveyor servicing the Klipspruit Expansion Project, and then running to the opencast pit across the Zibulo property.

In this context, this SIA's focus is only on developing a discard facility on the surface of the rehabilitated opencast and the connection of that discard facility to the existing PCPP via a conveyor.

5.1 Site Preparation / Operations phase

5.1.1 Site preparation / operations phase impacts

5.1.1.1 Nuisance impacts

It is anticipated that the site preparation / operational phases will result in several nuisance related impacts. The nuisance impacts should be recorded in the grievance mechanism and addressed as per the grievance mechanism procedure. The following nuisance impacts are anticipated:

- Dust pollution:

  Discard activities, heavy machinery and construction activities are typically dust-generating activities. Dust is anticipated to fall out rapidly with distance from the source. PM_{10} and $PM_{2.5}$ are predicted to disperse further and can negatively impact ambient air quality beyond the boundary.

- Visual pollution:

  The final height of the discard facility will be just under 30 m. The facility will be visible to the surrounding roads and from the southern portions of Phola. There will be limited on-site lighting to satisfy immediate operating requirements, and some low-level impact may result from this. The formation of dust plumes will also have an adverse visual impact [8]

- Noise pollution:

  Noise pollution during the day and night-time resulting from materials handling activities, vehicle noise during discard hauling, and heavy vehicle/machinery noise.

5.1.1.2 Job security

The opencast pit is approaching the end of its life. There is an expansion project to the south. The discard facility will be built over the footprint of the opencast and will continue for the operational life of the underground mine. Anglo will continue using the current workforce to dispose of coal discard onto the discard facility during the operational phase. This aspect will result in improved job security for the current employees at Zibulo.

[8] (Golder Associates Africa 2020a)

5.1.1.3 Potential impact on water users

The main water users in the area relate to the Town of Phola, located directly north of Zibulo Opencast. While most of the areas receive water from the ELM, it is likely that informal dwellers use water directly from the river and small farm dams downstream of the mine. Further downstream water is used for irrigation.[9]

The development of the proposed discard facility on the surface of the opencast provides a specific advantage. The opencast pit has installed water abstraction pumps and pipes connected to a lined dam on site. This lined dam is connected to the EWRP. Consequently, the development of the proposed discard facility on the opencast mine's surface will not have any additional material effect on neighbouring water users over that which would already have occurred due to the opencast mine itself.

5.1.2 Mitigation measures

The proposed mitigation measures for the site preparation / operational phase impacts are shown in Table 3.

Table 3: Proposed mitigation measures for impacts during the site preparation phase

Impact	Mitigation measures
Nuisance impacts	■ Dust pollution ▪ The mitigation measures indicated in the Zibulo Atmospheric Impact Report must be implemented.[10] ▪ The air quality monitoring for the discard facility and broader Zibulo operations should be extended for the discard facility's life. ■ Noise pollution ▪ Zibulo Colliery must install and manage the noise management actions as indicated in the respective environmental and operational management plans. ▪ The baseline noise monitoring for the discard facility and broader Zibulo operations should be extended for the discard facility's life. ■ Visual pollution ▪ The mitigation measures indicated in the Zibulo Visual Impact Assessment report must be implemented.[11] ▪ This will include: – Measures to reduce the visibility of the sources of the visual impact; and – Minimising the intrusiveness of the visual pollution. ▪ In particular, consideration must be given to the location, intensity, and direction of lighting inwards to the activity area to minimise light spill over outside the operational area.

[9] (Golder Associates 2020)

[10] (Golder Associates Africa 2021)

[11] (Golder Associates Africa 2020a)

Impact	Mitigation measures
Job security	■ Ensure that current local employees are utilised.
Water utilisation	■ Zibulo Colliery must install and manage the water management actions as indicated in the respective environmental and operational management plans.[12] ■ Changes in surface or groundwater quality or related aspects that may have an off-site impact must be communicated to the relevant institutional and community stakeholders urgently.

5.1.3 Rating of impacts

In this section, preparation phase impacts are rated based on their significance before and after mitigation (Table 4).

Table 4: Rating of preparation phase impacts

Indicator of potential impact	Pre-mitigation					Post-mitigation				
	Magnitude	Duration	Scale	Probability	Significance	Magnitude	Duration	Scale	Probability	Significance
Dust Pollution	6	5	2	4	52	4	5	2	2	22
Light Pollution	6	5	2	4	52	4	5	2	2	22
Noise pollution	6	5	2	4	52	4	5	2	2	22
Job security	6	5	2	3	+39	6	5	2	4	+52
Impact on water users	8	5	2	5	75	4	5	2	2	22

5.2 Closure phase

It is important to sketch the closure scenario so that potential impacts can be correctly contextualised. To the extent possible, progressive rehabilitation of the discard facility will take place. The final discard facility will be capped with soil of approximately half metre thickness and vegetated. There will be surface water control on the slopes of the rehabilitated discard facility. Once revegetation is successful and it is demonstrated that the side slopes are stable, water running from the site will be discharged as clean water into the stream that runs to the east.

5.2.1 Impacts

During this phase, various nuisance implications are anticipated viz;

- Low visibility due to dust plumes formation as a result of the initial rehabilitation activities; and
- Noise pollution as a result of rehabilitation activities.

[12] (Golder Associates 2020)

5.2.2 Mitigation measures

The proposed mitigation measures for the closure phase impacts are shown in Table 5.

Table 5: Proposed mitigation measures for impacts during the closure phase

Impact	Mitigation measures
Nuisance impacts	Dust and noise control mitigation measures, as highlighted in Table 3, will continue to be implemented by Zibulo in this phase.

5.2.3 Rating of impacts

In this section, closure phase impacts are rated based on their significance before and after mitigation (Table 6).

Table 6: Rating of closure phase impacts

Indicator of potential impact	Pre-mitigation					Post-mitigation				
	Magnitude	Duration	Scale	Probability	Significance	Magnitude	Duration	Scale	Probability	Significance
Nuisance impacts	4	2	2	4	32	2	2	2	3	24

6.0 CONCLUSION

The impacts that have been identified for the proposed discard development project at the Zibulo Opencast can be mitigated to acceptable significance levels. There are consequently no fatal flaws or social impacts regarded to be unacceptable that would limit the development of the discard facility in the manner and at the site proposed.

7.0 REFERENCES

eMalahleni Local Municipality. 2021a. “EMALAHLENI LOCAL MUNICIPALITY - Ward Councillors.” *EMalahleni Local Municipality Web Site*. https://emalahleni.gov.za/v2/ward-councillors.

eMalahleni Local Municipality. 2021b. *EMalahleni Local Municipality : IDP Review for 2020/2021*. eMalahleni.

Golder Associates. 2020. *Hydrology/ Hydrogeology Report for the Discard Facility at Zibulo Opencast Operation*. Midrand.

Golder Associates Africa. 2020a. *Visual Impact Assessment for the Proposed Zibulo Colliery Discard Facility*. Midrand.

Golder Associates Africa. 2020b. *Zibulo Colliery Development of a Discard Facility at the Opencast Operation: Comment and Response Report*. Midrand.

Golder Associates Africa. 2021. *Atmospheric Impact Report for the Zibulo Colliery Discard Dump Facility*. Midrand.

Nkangala District Municipality. 2020. *Nkangala District Municipality: 2019-2020 Integrated Development Plan*. Nkangala.

Parliament of the Republic of South Africa. 1996. *Constitution of the Republic of South Africa, Act 108 of 1996*. Cape Town: Parliament of South Africa.

Parliament of the Republic of South Africa. 1998. *National Environmental Management Act, 1998 (Act 107 of 1998)*. Cape Town: Parliament of the Republic of South Africa.

Parliament of the Republic of South Africa. 2009. *National Environmental Management Waste Act 59 of 2008*. Cape Town: South African Presidency.

Statistics South Africa. 2018. *Community Profile Mpumalanga: Community Survey 2016*. Pretoria.

Signature Page

Golder Associates Africa (Pty) Ltd.

Brian Magongoa
Social Scientist

Dr David de Waal
Technical Director

BM/DdW/mc

Reg. No. 2002/007104/07
Directors: RGM Heath, MQ Mokulubete, MC Mazibuko (Mondli Colbert), GYW Ngoma

Golder and the G logo are trademarks of Golder Associates Corporation

https://golderassociates.sharepoint.com/sites/104294/project files/6 deliverables/19117180-340179-19_sia/19117180-340179-19_sia_final_16apr21.docx

APPENDIX A

Details of Specialist and Declaration of Interest

DETAILS OF SPECIALISTS AND DECLARATION OF INTEREST

Details of specialists

Table A1 indicates the qualifications of the specialist and reviewer.

Table A1: Qualifications and experience of the specialists

Role	Name	Qualifications and Experience
Senior Social Scientist	Brian Magongoa	■ Bachelor of Art, majoring in Geography and Education. ■ Brian is a Senior Social Scientist with more than 28 years' experience
Senior Reviewer	Dr David de Waal	■ DLitt et Phil ■ David has more than 30 years of local and international experience in SIAs.

Declaration of interest

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the EIA Regulations of 2014.

PROJECT TITLE

Environmental Authorisation for the proposed Zibulo Discard facility Expansion project – Social impact assessment

Details of Specialist	
Specialist	Brian Magongoa (Golder Associates Africa (Pty) Ltd
Contact Person	Brian Magongoa
Address	Golder House, Maxwell Office Park, Magwa Cres, Building 1, West, Midrand, 1685
Cell	+27 82 873 6035
Email	Bmagongoa@golder.co.za
Qualifications	BA (Geography and Education) Certificate in Community Development Train the Trainer Certificate

I, Malesela Brian Magongoa, declare that:

General declaration:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014. I also do not have a vested interest in the proposed activity proceeding:

Golder Associates Africa (Pty) Limited

APPENDIX B

Impact Rating Methodology

THE IMPACT RATING METHODOLOGY

The impact rating methodology used to assess each impact's scoring is based on four impact assessment scoring scales. The impact assessment scoring factors are outlined in Table B1.

Table B1: Impact assessment scoring factors

Scale	Magnitude
5- International	10- Very high/unknown
4- National	8- High
3- Regional	6- Moderate
2- Local	4- Low
1- Site Only	2- Minor
0 - None	
Duration	**Probability**
5- Permanent (>10 years)	5- Definite/Unknown
4- Long-term (7 - 10 years, impact ceases after site closure has been obtained)	4- Highly Probable
3- Medium-term (3 months- 7 years, impact ceases after the operational life of the activity)	3- Medium Probability
2- Short-term (0 - 3 months, impact ceases after the construction phase)	2- Low Probability
1- Immediate	1- Improbable
	0- None

The following definitions apply to the ranking factors outlined in Table B1.

- **Scale/Geographic extent:** The scale refers to the area that could be affected by the impact and is classified as site, local, regional, national, or international.
- **Magnitude**: This is a measure of the degree of change in a social aspect (e.g., the area of pasture, livelihoods, access, social cohesion, relocation and so forth) and is classified as none/negligible, low, moderate, or high. The categorisation of the impact magnitude may be based on a set of criteria (e.g. health risk levels, social aspects, and professional judgement) pertinent to each of the discipline areas and key questions analysed. **Magnitude** is further defined on a scale from minor to high. The definition of magnitude from a social perspective is indicated in Table B2.

Table B2: Defining magnitude

Magnitude	Social Context
Minor	A very slight change from the existing baseline condition. Change barely distinguishable, approximating the 'no change' situation.
Low	A minor shift away from existing baseline conditions. Change arising from the change will be discernible, but underlying social conditions will be similar to pre-development circumstances.
Moderate	Loss or alteration to one or more key social factors from the baseline conditions. Change arising from the change will be noticeable, and underlying social conditions will be changed to pre-development circumstances. Aspect here would typically include changes in livelihood, safety, access, uncertainty about future expectations.
High	Significant loss or alteration to many key social factors compared to the baseline conditions. Impacts arising from the change will be very intrusive and change the affected people's social pattern and interactions. Typically, this would, to a large extent, change life as they knew it before to an unacceptable existence, with significant social, financial, livelihood and high levels of future shock.
Very High / Unknown	Social circumstances change to a level that the general social wellbeing of people is no longer possible.

- **Duration:** The duration refers to the length of time over which a social impact may occur, i.e. immediate/transient, short-term (0 to 7 years), medium-term (8 to 15 years), long-term (greater than 15 years with impact ceasing after the closure of the project), or permanent.
- **Probability of occurrence:** This aspect is a description of the probability of the impact actually occurring as improbable (less than 5% chance), low probability (5% to 40% chance), medium probability (40% to 60% chance), highly probable (most likely, 60% to 90% chance) or definite (impact will definitely occur).

Significance points

Once these factors are ranked for each impact, the significance of the two aspects, occurrence, and severity, is assessed using the following formula:

Significance Points= (scale + magnitude + durations) x probability.

The maximum value is 100 significance points.

Significance rating

Table B3 indicates the relationship between the significance points and the associated significance rating.

Table B3: Significance rating

Points	Significance rating	Description
SP>70	Very High / Unknown	Social circumstances change to a level that people's general social wellbeing is unlikely to continue, regardless of possible mitigation.
SP 60 - 70	High environmental significance	An impact that could influence the decision about whether or not to proceed with the project. The ability to mitigate may influence this significance.
SP 30 - 60	Moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could influence the decision unless it is mitigated.
SP 10 - 30	Low environmental significance	Impacts with little real effect and which will not influence or require modification of the project design.
SP <10	Minor	Impacts are incidental and not have an influence on or require modification of the project design.
+	Positive impact	An impact that is likely to result in positive consequences/effects.

APPENDIX C

Social Baseline of the Project Area

SOCIAL BASELINE

This baseline provides an overview of the project's social receiving environment on a district and local level.

NKANGALA DISTRICT MUNICIPALITY

This section is based mainly on the Nkangala 2019-2020 IDP and the 2016 Mpumalanga Community Survey. [13]

Population

NDM accounts for a total population of 1.4 million or 32.9% of the Mpumalanga Province's population, ranking as the most populous district municipality in 2016. Table 2 shows the population trends of the NDM from 2011 to 2016 and the 2030 projected population. The whole district had an annual growth rate of 2.27% between 2011 and 2016.

Table C1: Population of NDM

Year	Population
2011 (Census)	1 308,125
2016 (Community Survey)	1 445,624
2030	2 038,869

In 2016, NDM had a population density of 84.9 per square kilometre, and it ranked highest amongst its peers. NDM had an average annual growth in its population density of 2.16% per square kilometre. It was also the region that had the highest average annual growth rate. In 2016, the NDM had 404 000 households. This number of households equates to an average annual growth rate of 2.88% in households from 2006 to 2016.

Education

Within NDM, the number of people without any schooling decreased from 2006 to 2016 with an average annual rate of -2.85%. The number of people with matric only increased from 161,000 to 271,000. The number of people with matric and a certificate/diploma increased by an average annual rate of 5.38%, with the number of people with matric and a bachelor’s degree increasing by an average annual rate of 7.55%. Overall improvement in education level is visible with an increase in the number of people with matric or higher education.

Employment and economic activities

From 2006 to 2016, the NDM had an average annual employment growth of 3.05%. It was estimated that in 2016, 17.42% of all the households in the NDM were living on R30000 or less per annum.

The NDM's economy is made up of various industries. In 2016, the mining sector was reported to be the largest within NDM, accounting for R 41.1 billion (37.3%) of the total Gross Value Added[14] in the district municipality's economy. The sector that contributes the second most to the GVA of the NDM is the manufacturing sector at 12.0%, followed by the community services sector with 11.4%. The sector that contributes the least to the economy of NDM is the agriculture sector, with a contribution of R 2.18 billion or 1.98% of the total GVA Figure C1 shows the 2011 and 2016 industry contribution to the GDP (Gross Domestic Product) at basic prices.

[13] (Statistics South Africa 2018; Nkangala District Municipality 2020)

[14] The GRA provides a sector breakdown, where each sector is measured in terms of its value added produced in the local economy.

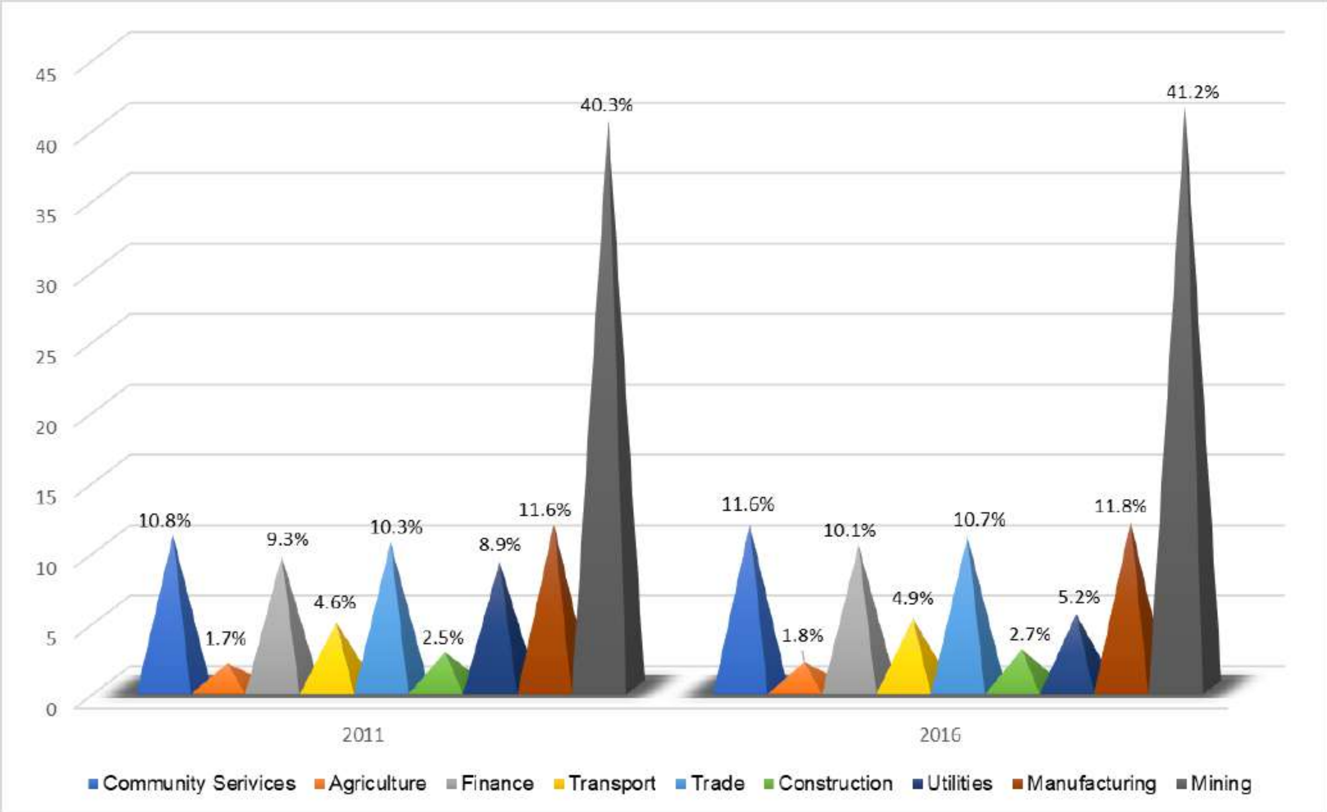


Figure C1: Industry contribution to GDP at basic prices in NDM, 2011 and 2016.

Housing

In 2016, the NDM had a total number of 147 000 (36.37% of total households) with very formal dwelling units, a total of 190 000 (47.03% of total households) formal dwelling units and a total number of 53 400 (13.23% of total households) informal dwelling units.

Water, sanitation, and electricity

The NDM had a total number of 155 000 (or 38.44%) households with piped water inside the dwelling, a total of 169 000 (41.80%) households had piped water inside the yard, and a total number of 31 700 (7.86%) households had no formal piped water.

NDM was reported in 2016 to have a total number of 221 000 flush toilets (54.65% of total households), 56 400 Ventilation Improved Pit (VIP) (13.96% of total households) and 114 000 (28.16%) of total household's pit toilets. The NDM was reported to have a total number of 199 000 (49.33%) households with their refuse removed weekly by the authority. Some 8 890 (2.20%) households had their refuse removed less often than weekly by the authority, and 152 000 (37.70%) households which removed their refuse personally (own dump).

In 2016, the NDM had a total number of 34 800 (8.63%) households with electricity for lighting only, a total of 322 000 (79.77%) households had electricity for lighting and other purposes and a total number of 46 800 (11.60%) households did not use electricity.

eMALAHLENI LOCAL MUNICIPALITY

This section is mostly based on the ELM 2020-202 IDP review and the 2016 Mpumalanga Community Survey. [15] The Zibulo Colliery falls within the. ELM. The proposed discard facility is within the footprint of the Zibulo Colliery.

Location

The ELM is located in the North-west of the Mpumalanga Province, and it covers an area of about 2677.67 square kilometres. Some of the major towns and settlements near Klipspruit Colliery include Phola and Ogies. This baseline only highlights the broader ELM's socio-economic conditions because information about the towns and settlements is limited.

Governance structure

All municipalities in South Africa are made up of two structures, a political structure and an administrative structure. The political structure is responsible for governance, public participation, and ensuring that the communities' needs and priorities are realised. The governance structure of ELM on the political side is headed by the council, which elects the Executive Mayor. The Executive Mayor, in turn, appoints six full-time councillors who are the members of the Mayoral Committee (MMC). The MMCs assist the Executive Mayor, and the Executive Mayor may delegate certain of her function to the MMCs. Council also elects the Speaker of Council, who presides at council meetings. Council also elects the Whip of the Council, who ensures good behaviour amongst councillors. The Klipspruit Colliery falls within Ward 30 of the EMalahleni demarcation board. The ward councillor is Cllr. Nomasonto Mofokeng[16]

Population

ELM accounts for the largest population within the NDM, with an estimate of 455 228 people. Table C2 shows the population trends of ELM from 2011 to 2016 and the 2030 projected population. From 2011 to 2016, the population of ELM has increased by 3.2%.

Table C2: Population trends of ELM[17]

Year	Population
2011 (Census)	395 466
2016 (Community Survey)	455 228
2030	707 530

The increase in the ELM population might be due to the growth of mining industries and businesses around the area. The population growth has the following adverse impacts:

- Informal settlements and back rooms;
- Strain on water, sanitation, electricity, and roads resulting in quality and capacity problems; and
- An increase in unemployment, particularly amongst youth and unskilled, might impact crime, prostitution, and drug abuse issues.

[15] (eMalahleni Local Municipality 2021b; Statistics South Africa 2018)

[16] (eMalahleni Local Municipality 2021a)

[17] (Statistics South Africa 2018)

The total number of households in ELM has increased over the years. In 2011, a total of 119 874 households was respectively reported in ELM. In 2016, the number of households has increased to 150 420 in ELM.

Gender and age distribution

The age and gender structure of the population is a key determination of population change and dynamics. The male gender in ELM constitutes approximately 53% of the total population, while the female gender constitutes 47%. This trend can often be observed in mining towns where the mining industry is predominantly male orientated. Most ELM people (43.1%) are in the 15-34 age group, as shown in Figure C2.

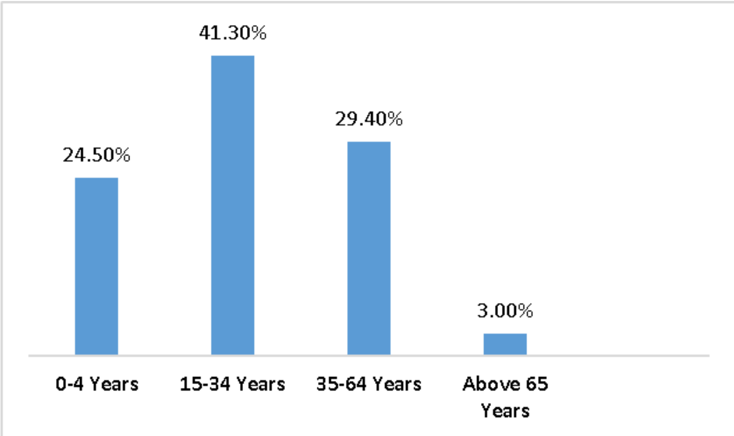


Figure C2: Age distribution

Ethnicity and language

The population distribution of the ELM composes of all racial groups, with over 65% of the population belonging to the Black African group, and the most spoken language is isiZulu and Southern Ndebele. The dominant home language in the ELM is isiZulu (42.4%), followed by Afrikaans (14.6%), Sepedi (12.5%) and isiNdebele (10%).

Education

Statistics South Africa Community Survey shows that the population in ELM aged 20+ completed grade 12 increased from 117 021 in 2011 to 146 952 (an increase of 29 931) in 2016, an increase of 25.6% over the relevant period.

Employment

In 2011, 138548 people in ELM were employed either by the formal and informal sector. Figure C3 shows the unemployment rate of the ELM.

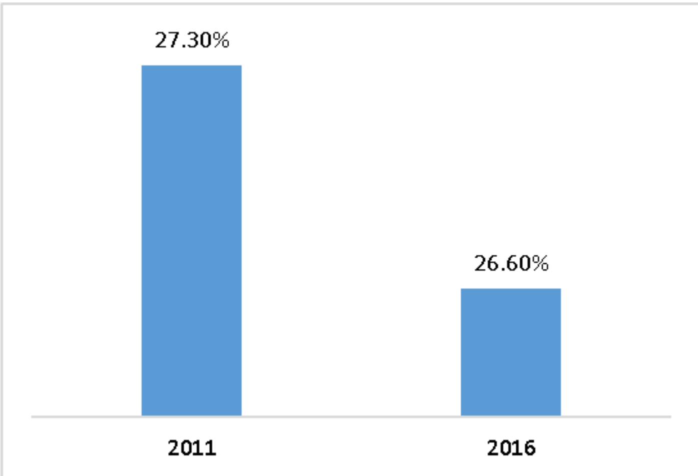


Figure C3: 2011 and 2016 unemployment rate in the ELM

Apart from the formal and informal sector as the channels for sourcing income, other income sources within the ELM include social services grants. Table C3 shows the grant types received by residents in ELM.[18] In a growing economy where production factors increase, most NDM incomes are spent purchasing goods and services. Therefore, the measuring of the income and expenditure of households is a significant indicator of economic trends.

Table C3 Social Services grant types in ELM

Grant type	ELM
Old age	15 967
War veteran	0

[18] (Nkangala District Municipality 2020)

Grant type	ELM
Disability	5944
Foster child	2382
Care dependency	932
Child support	65 968
Grant in aid	650

Key economic activities

In 2015, the ELM contributed 20.9% to the Mpumalanga economy. From 1996 to 2015, ELM demonstrated an average annual economic growth of 2.4%. The sectors contributing to the economic activities in ELM, consequently contributing to the economy of NDM, are highlighted further in the next sections:

Mining

Mining in ELM is a very significant economic sector. It has also become a major spatial development constraint due to shallow undermining, especially in the central, northern, and southern portions of Witbank town.

Industries

There are various industrial areas in the ELM, mostly situated within or around Witbank town.

Business activities

The project area is close to the town of Ogies, with the highest maize production in the maize triangle and hosts the AFGRI Cooperative. The Ogies station handles a substantial portion of the country's freight. The town also functions as a service centre for farmers, with several service industries and cooperatives focusing specifically on the agricultural sector. The township of Phola is located north Ogies, and there is a vast distance between these two settlements.

Kendal Power station was completed between 1971 and 1982 and is currently the largest coal-fired power station globally. The power station makes a significant contribution to the economy of Ogies and Phola and receives its coal from the adjacent Khutala mine. Most of the residents of Ogies and Phola are employed at the power station and the mine. Undermining, however, poses constraints to the development of these settlements.

Ogies has developed in a linear pattern along two main roads and a railway line, namely the P29-1 and adjacent railway line and the R545. The general maintenance of the public spaces and infrastructure (road reserves, open spaces, roads) in the town is very poor and requires attention. Witbank central business district (CBD) represents the largest concentration of business activity in ELM. The urban areas in ELM are mainly residential with supportive services such as business and social facilities.

Tourism

ELM is the point of entry into Mpumalanga from Gauteng. [19] The province of Mpumalanga has unique scenery. It is also a home to many world-renowned attractions, including the famous Kruger Park and many others. Also, Mpumalanga is the only province of South Africa to border two Mozambique provinces and all four Swaziland districts. Unfortunately, tourism potential in the two municipalities is not fully exploited.

[19] (Nkangala District Municipality 2020)

Housing

The ELM has different dwelling types. Table B1 shows the material used range from brick/concrete, traditional, flat, cluster, townhouses, informal and caravans. ELM has the highest number of very formal dwelling units with the NDM.

Table C4: The number of dwelling unit type, 2016.

Dwelling unit type	Number of households
Very formal	74000
Formal	33500
Informal	27600
Traditional	3240
Other dwelling types	816

Water

ELM has been reported as having the highest number of households with piped water inside the dwelling. Figure C4 shows that the increase in population puts pressure on water resources. The households without access to water in ELM has increased from 2011 to 2016.

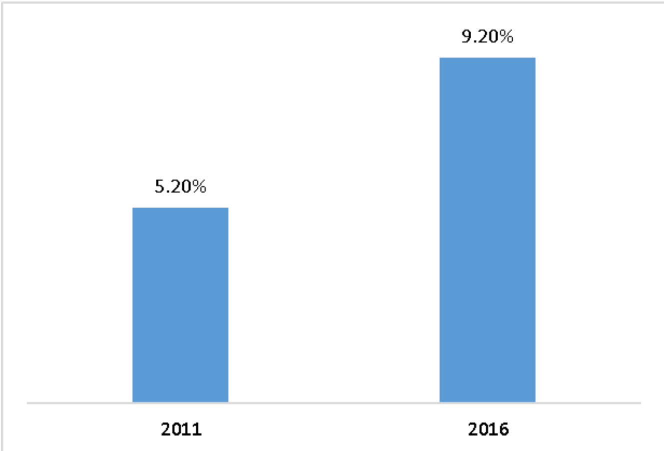


Figure C4: Households without water access in ELM in 2011 compared to 2016

The ELM functions as a water service authority and water service provider. The department is responsible for providing potable water and supplying raw water to all industrial areas within the municipality. The water network has 950km of pipelines, and still, large components are of asbestos pipes. There are minimal groundwater resources available within the municipality area, mainly due to acid mine water seeping into sub-surface aquifers. Most existing boreholes are privately owned and mainly located in agricultural smallholdings.

Sanitation

ELM was reported to be the municipality with the highest number of flush toilets within the NDM (Table C5).

Table C5: Sanitation facilities in ELM

Type	Number of households
Flush Toilet	101 000
VIP	6790
Pit Toilet	27 300
Bucket system	509
No Toilet	3130

ELM is the municipality with the highest number of households where the refuse is removed weekly by the authority. Some 93 400 (46.93%) of the households have their refuse removed weekly by the authority. There is a waste management unit in ELM currently servicing 95 114 formal households and over 100 businesses with skipping collection. The sewer network in ELM has 1700km of pipelines with 27 pump stations within the network. Some components of old township establishments are made of clay pipes.

Electricity

The number of households without electricity in ELM has increased over the years (from 2011 to 2016) by 0.8% Figure C5).

The ELM is a licensed distributor of electricity, except to the mines, as specified by the National Energy Regulator of South Africa. Unfortunately, the municipality experiences various challenges, such as old infrastructure, increased electricity demand, expansions, and illegal connections (which cause the electricity infrastructure to be overloaded and fail).

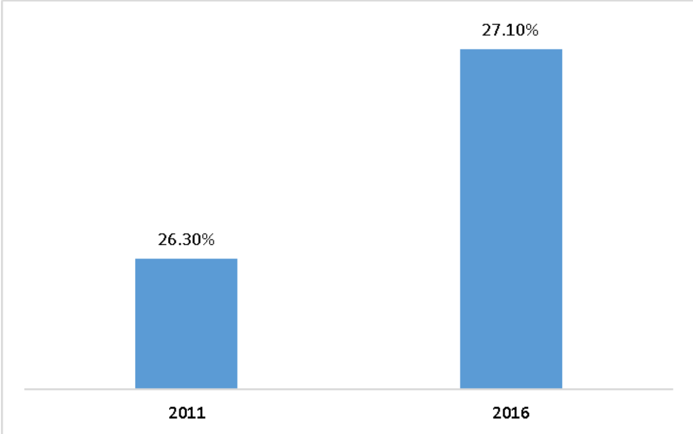


Figure C5: Households without electrical connection in ELM in 2011 and 2016

Crime

It is important to mention that crime is evident in ELM, and it is on the increase.[20].Contact crime has shown an increase together with violent crimes in the two municipalities. Drug abuse has also been identified as a concern and a contributing factor to crime. Vandalism and "strip"-mining of metals and copper are also creating concern within the municipalities. To all crime, sectors have formed neighbourhood watch groups, which assist the police in crime prevention as they are understaffed and under-equipped.

Roads

The freeways that converge on eMalahleni town include the N4 and the N12. The N12 starts at eMalahleni, and the N4 proceeds to Nelspruit and Maputo. Running parallel to the N4 is a rail line that connects Gauteng through eMalahleni to Maputo. This significant rail and road infrastructure have been identified as part of a Southern African initiative to connect Walvis Bay (on the west coast of Africa) and Maputo (on the east coast of Africa) called the Maputo Corridor.

[20] (Nkangala District Municipality 2020)

APPENDIX D

Document Limitations

DOCUMENT LIMITATIONS

This document has been provided by Golder Associates Africa Pty Ltd ("Golder") subject to the following limitations:

i) This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

ii) The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regard to it.

iii) Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

iv) In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

v) Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

vi) Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

vii) The Client acknowledges that Golder may have retained sub-consultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all its sub-consultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder's affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder's affiliated companies, and their employees, officers and directors.

viii) This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party because of decisions made or actions based on this Document.

GOLDER ASSOCIATES AFRICA (PTY) LTD

REPORT

Costing for the Rehabilitation and Closure of the Proposed Discard Facility at Zibulo Colliery

Anglo American Inyosi Coal (Pty) Ltd

Submitted to:

Ms Melissa Hallquist-Waites
Anglo American Coal
Supply Chain
Ground floor security
55 Marshall Street
Johannesburg

Submitted by:

Golder Associates Africa (Pty) Ltd.
Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand, 1685, South Africa
P.O. Box 6001, Halfway House, 1685

+27 11 254 4800

19117180-337522-9

June 2021

Distribution List

1 x electronic copy to Anglo American Inyosi Coal (Pty) Ltd

1 x electronic copy to projectsreports@golder.co.za

1 x electronic copy to SharePoint Site

LIST OF TERMS AND ABBREVIATIONS USED

Closure	This involves the application for closure certificate and initiation of transfer of on-going care and maintenance to third parties.
Contingencies	This allows for making reasonable provision for possible oversights/omissions and possible work not foreseen at the time of compilation of the closure costs. Allowance of between 10 percent and 20 percent would usually be made based on the accuracy of the estimations. The South African Department of Minerals and Energy Guideline (January 2005) requires an allowance of 10 percent
Decommissioning	This relates to the situation after cessation of operations involving the deconstruction/removal and/or transfer of surface infrastructure and the initiation of general site rehabilitation.
Post-closure	The period of on-going care and maintenance, as per arrangement with third parties.
Preliminary and Generals (P&Gs)	This is a key cost item that is directly related to whether or not third-party contractors are used for site rehabilitation. This cost item comprises both fixed and time-related charges. The former makes allowance for the establishment (and de-establishment) of contractors on site, as well as covering their operational requirements (electricity/water/communications) for their offices, workshops, etc. Time-related items make allowance for the running costs of the fixed charged items for the contract period. An allowance of 25% has been made for P&Gs
Rehabilitation	The re-instatement of a disturbed area into a usable state (not necessarily its pre- mining state) as defined by broad land use and related performance objectives.
Scheduled closure	Closure that happens at the planned date and/or time horizon.
Site relinquishment	Receipt of closure certificate and handover to third parties for on-going care and maintenance, if required.
Unscheduled closure	Immediate closure of a site, representing decommissioning and rehabilitation of the site in its present state.

Abbreviations	
DMR	Department of Mineral Resources
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EIA	Environmental impact assessment
EMPr	Environmental management programme
ERA	Environmental risk assessment
MPRDA	Mineral and petroleum resources development act
MRA	Mining rights area
NEMA	National environmental management act
PCPP	Phola Coal Processing Plant

Units of measurement	
ha	Hectares
m^2	Square metres
m^3	Cubic metres

PROJECT INFORMATION

Proponent's contact details

Name of Company	Anglo American Inyosi Coal (Pty) Ltd
Name of Mine	Zibulo Colliery
Name of project	Costing for the Rehabilitation and Closure of the Proposed Discard Facility at Zibulo Colliery
Postal address	Supply Chain Ground floor security 55 Marshall Street Johannesburg

Details of specialists who prepared the closure costing report

Golder was appointed by Anglo American Inyosi Coal (Pty) Ltd as the specialist closure team to compile this closure costing document for the mine, as aligned to GN R. 1147 (as amended).

The specialists who contributed to the closure costing report, including their relevant professional registrations and experience are listed below.

Name of company	Golder Associates Africa (Pty) Ltd	
Technical / Specialist input and review	Johan Bothma	PrLArch (SACLAP) BL, ML(Prof) MLArch 17 years' experience
Costing, report compilation and technical inputs	Sibongile Chabalala	BSc (Hons) Animal, Plant and Environmental Sciences 4 years' experience
Postal address	Building 1 Maxwell Office Park Magwa Crescent West Waterfall City Midrand 1685 Gauteng	
Telephone number	+27 (0) 11 254 4800	
Email address	Jbothma@golder.co.za	

Report sign-off

Position	Name	Signature	Date
Snr Rehabilitation and Closure consultant	Johan Bothma	Johan Bothma GOLDER	29 June 2021
Rehabilitation and Closure consultant	Sibongile Chabalala	Sibongile Chabalala GOLDER	29 June 2021

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION AND BACKGROUND

Golder Associates (Golder) was appointed by Anglo American Inyosi Coal (Pty) Ltd (AAIC) to compile a costing for the rehabilitation and closure of the proposed discard facility at Zibulo Colliery (Zibulo). The costing supports the environmental impact assessment (EIA) for the planned facility development. The contents of this document are aligned with the requirements of the Financial Provision Regulations, 2015 (GN R.1147 of 20 November 2015) (as amended), published under the National Environmental Management Act (Act 107 of 1998) (NEMA) (as amended).

Zibulo consists of an opencast pit and underground mining operation. The opencast operation currently consists of a single pit mined by contractors through truck and shovel mining methods with concurrent rehabilitation taking place, while the underground operation incorporates bord and pillar through continuous mining methods (Golder, 2020a).

The coal mined from Zibulo together with that from South32's Klipspruit Colliery is beneficiated at the Phola Coal Processing Plant (PCPP) which is a Joint Venture between South32 and Anglo. The coal is transported via rail to the Richards Bay Coal Terminal for export, with a small component being retained for domestic use. Two waste streams are produced from the PCPP, namely coarse discard from primary washing, and a fine discard slurry. The slurry is filtered via a filter press to remove water for reuse in the plant. The coarse discard and fine discard filter cakes are then deposited in the Klipspruit existing discard dump owned by South32, up to a predetermined level as per the mine's approved water use licence. The facility which has a footprint of 110 ha will reach capacity by 2021 and an alternative facility is required to service the discard disposal requirement of Zibulo Colliery (Golder, 2020a).

The proposed discard facility will occupy a total footprint area of approximately 140 ha, to be located over and beyond the backfilled area of the current open pit (Figure 1), providing a total placement capacity up to 2036 of approximately 26 000 000 m^3.The slope of the discard facility will be engineered at 1V:9H, which is considered very flat and therefore stable enough for this type of operation. The backfilled pit original ground level is to be used as the base surface when setting the allowable height of the discard facility. It is expected that the final discard facility permitted height will be approximately 29.7 m. All these factors will provide an allowable discard rate of 1 707 849 m^3/year. Trucking and dozing are to be used as methods of discard deposition (Golder, 2020a).

Post-closure water levels within the backfilled pit and surrounding aquifer will therefore require monitoring and management, to prevent potential decant of mine water to surface or into the weathered aquifer. This will be done through four abstraction boreholes until plume containment is achieved (Delta H, 2020), which will be decommissioned and plugged once pumping is no longer required.

2.0 BATTERY LIMITS

The battery limits for this closure costing comprise the proposed Zibulo discard facility and associated infrastructure, final void (sump), overland discard disposal conveyor, and associated haul roads, as indicated in Figure 1. All other aspects associated with the existing mine are excluded from this assessment, as they do not directly form part of the discard facility project and are assumed to be included in the site-wide closure costs. The long-term costs for pumping and likely treatment of extraneous groundwater have also not been determined in this assessment, as this will be required regardless of the discard facility being constructed over the open pit and is therefore assumed to already be included in the Zibulo side-wide closure costs.

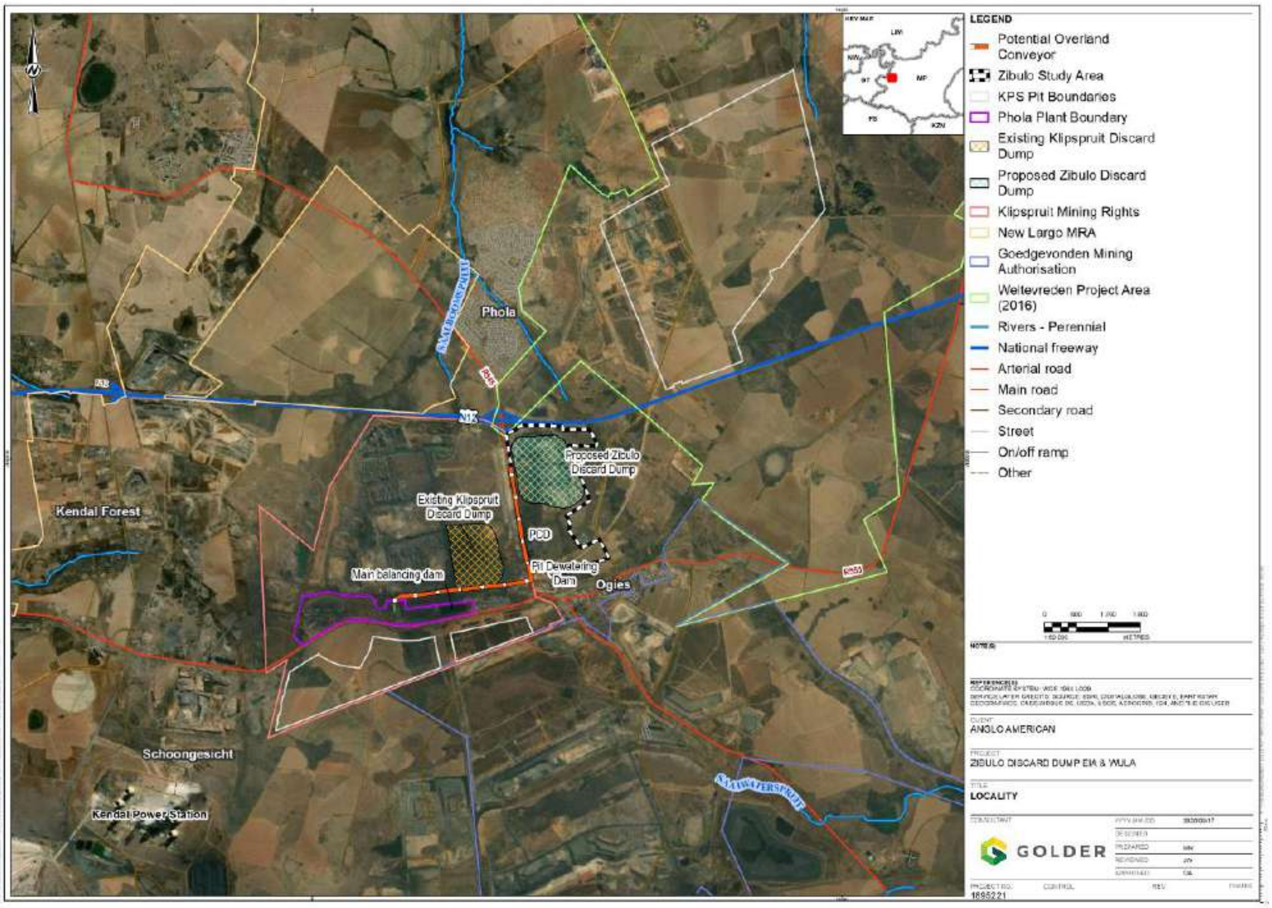


Figure 1: Location of the proposed Discard Dump on the Zibulo mine site

3.0 OBJECTIVES

The purpose of this assessment is to determine the closure costs for the proposed discard facility and the related infrastructure. The costing is compiled to inform discard facility rehabilitation and closure costs.

4.0 APPROACH TO COST DETERMINATION

The approach followed in compiling the closure plan and closure costs for the discard dump at Zibulo was as follows:

- Conduct discussions with specialists and review engineering design and specialist reports;
- Compile a screening level closure risk assessment to ensure that the discard facility rehabilitation is considered within the broader site wide closure context; and
- Determine the scheduled closure costs of the discard dump facility, as per the requirements of GN R.1147, by:
  - Obtaining the discard facility and related support infrastructure quantities based on the engineering designs;
  - Identify appropriate mitigation and rehabilitation/closure measures for the various aspects of the project including rehabilitation of the discard dump, demolition of the support infrastructure, general surface rehabilitation, and post-closure monitoring and maintenance;

- Verify unit rates for infrastructure dismantling and demolition as well as associated rehabilitation of disturbed areas, taking account of the latest demolition equipment available;
- Apply the above unit rates and associated quantities in the latest Golder costing model to determine the scheduled closure costs as at December 2020; and
- Documenting the outcomes of the above in the closure plan and associated closure costs report.

5.0 AVAILABLE INFORMATION FOR CLOSURE COST COMPILATION

The information listed below was reviewed and where applicable applied to inform the closure cost assessment:

Title/Description	Author	Date
Zibulo Colliery- Opencast Operation Final Rehabilitation, Decommissioning and Closure Plan	Shangoni	12 October 2019
Zibulo Colliery- Opencast Operation Final Rehabilitation, Decommissioning and Closure Plan	Shangoni	12 October 2019
Zibulo Colliery Annual Rehabilitation Plan for the Period: January 2019 to December 2019	Anglo	2019
Technical Design for the Proposed Zibulo Colliery Discard Facility	Golder(a)	March 2021
Zibulo Colliery (Discard Dump) Groundwater Flow and Transport Model Scenarios	Delta H	November 2020
Visual Impact Assessment for the proposed Zibulo Colliery Discard Facility	Golder(b)	November 2020
Zibulo Rehabilitation Review: High Level Topsoil Review and Recommendations	Anglo	March 2020

MINE SITE CONTEXT

6.0 CURRENT MINE SITE STATUS

Zibulo is located immediately northwest of Ogies in the eMalahleni Local Municipality, within the greater Nkangala District Municipality in the Mpumalanga Province, South Africa. The proposed discard facility will be located inside the Zibulo open pit operations which is bordered by the N12 national road to the north and the R545 arterial road to the west (Figure 2).

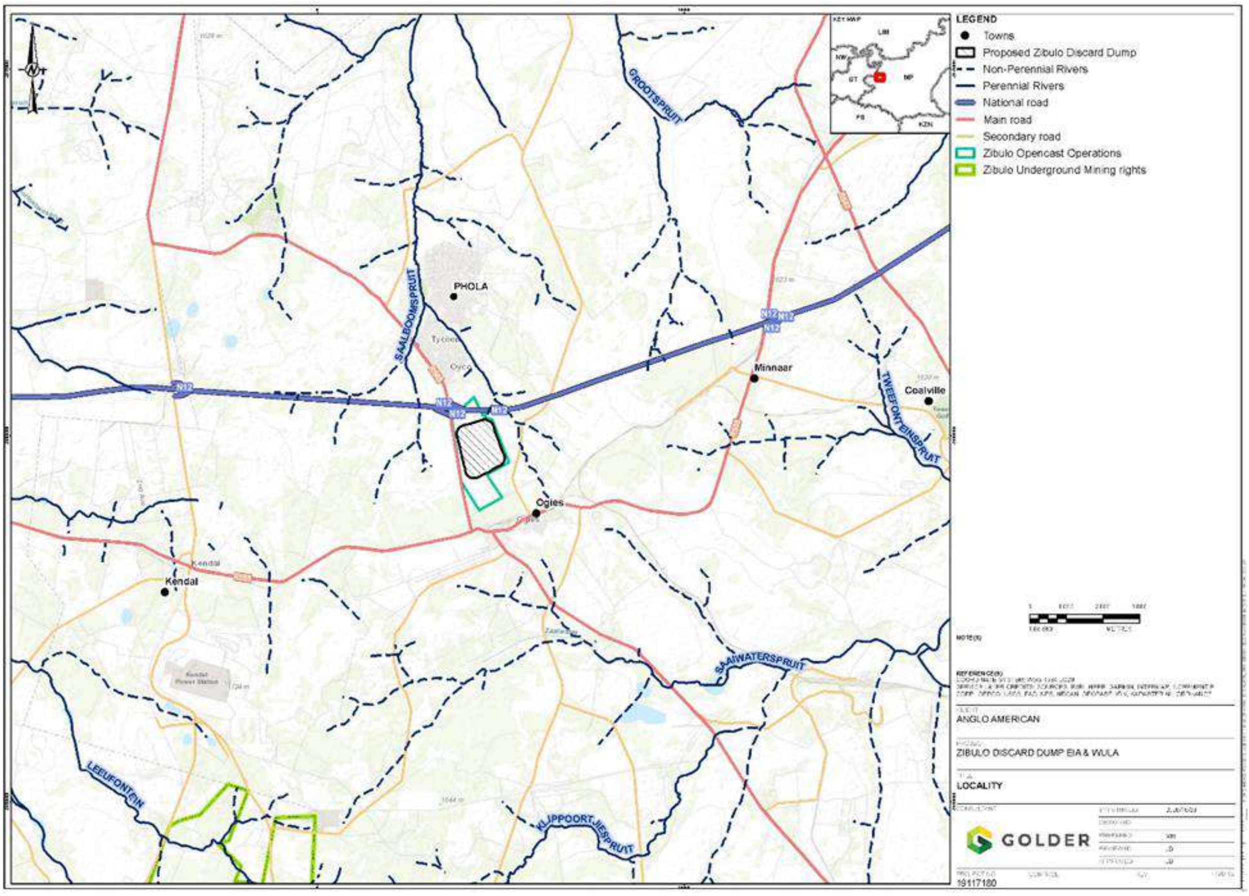


Figure 2: Location and extent of the Zibulo Colliery operation

7.0 CURRENT MINE SITE STATUS

Zibulo consists of both an open pit operation and underground operation. The opencast operation currently consists of a single pit mined by contractors through truck and shovel mining methods with concurrent rehabilitation taking place (Golder, 2020a).

The coal mined from Zibulo together with that from the Klipspruit Colliery is beneficiated at the PCPP which is a Joint Venture between South32 and Anglo Coal Inyosi Coal. The coal is transported via rail to the Richards Bay Coal Terminal for export, with a small component being retained for domestic use. Two waste streams are produced from the Phola coal beneficiation plant, namely coarse discard from primary washing, and a fine discard slurry. The slurry is filtered via a filter press to remove water for reuse in the plant. The coarse discard and fine discard filter cakes are then deposited in the Klipspruit existing discard dump up to a predetermined level as per the mine's approved water use licence.

8.0 MINING RIGHTS HOLDER

The Mining Right holder of Zibulo Colliery for the opencast operation is Anglo American Inyosi Coal (Pty) Ltd (AAIC) with reference No. MP 30/5/1/2/2 (388) MR.

9.0 EMPR REHABILITATION CRITERIA

The following general rehabilitation and closure criteria pertaining to the mine have been extracted from the 2019 Final rehabilitation, decommissioning and mine closure plans (closure plan) for the open pit and underground operations (Shangoni, 2019):

- Identify post-closure uses of land occupied by mine infrastructure in consultation with the surrounding landowners. Should a suitable use for any mine infrastructure not be found, it will be removed;
- Rehabilitate all areas occupied by infrastructure (either plant, shaft or other) to their pre-mining land capabilities as far as practicable;
- Mine planning allows for no open voids to remain following closure;
- Rehabilitate all disturbed land to a condition that is suitable for its post-closure uses;
- Rehabilitate all disturbed land to a condition that facilitates compliance with applicable environmental quality objectives (e.g. air and water quality objectives);
- Reduce the visual impact of the mine components through rehabilitation of all disturbed land and residue deposits;
- Rehabilitate all disturbed land and residue deposits to a condition where post-closure management is minimised;
- Rehabilitation standards will be such that runoff from rehabilitated areas can be regarded as uncontaminated;
- Rehabilitation standards will be such that infiltration through disturbed strata to groundwater will be minimised (free draining). No significant amounts of ponding must be observed on rehabilitated open pit areas for prolonged periods after rainfall events;
- Maintain the required pollution control facilities and the condition of the rehabilitated land after closure;
- Submit monitoring results to the relevant authorities;
- Develop a retrenchment programme in a timely manner; and
- Keep authorities informed of the progress of the decommissioning phase activities.

It is to be noted that the original EMPr did not have any rehabilitation criteria set out for the rehabilitation of residue deposits such as the proposed discard facility. Below are the rehabilitation criteria that have been set out for the discard facility in this assessment:

- Ensure that water draining off the surface of the discard facility is clean and channeled into the clean water systems;
- Contain seepage from the discard facility areas in a dirty water management system and send to the EWRP for treatment;
- Ensure that runoff is not kept on the discard dumps, but allowed to be free-draining;

- Rehabilitate the discard facility to ensure structural stability and mitigate surface water, groundwater or air pollution to nearby catchments;
- Cover the discard facility with a growth medium suitable for the establishment of vegetation to limit erosion;
- Divert all surface water, which is considered to be clean water after vegetation has established itself, past the dirty water management system;
- Re-vegetate all areas, including the discard facility and water control structures, and maintain these areas in the normal way for a period of a minimum 10-year period after decommissioning activities have ceased; and
- Monitor groundwater, surface water, vegetation and settlement for a minimum 10-year period after operations cease or until the residual risk of the discard facility is understood.

10.0 FINAL LAND USE

The site-wide closure concept is expected to provide a landscape that can be integrated into the surrounding land use context, albeit to a lesser extent than at pre-mining conditions. The adjacent land use is dominated by agricultural activities (mainly open grasslands), mixed commercial and residential (Ogies Town) and mining activities (operational and defunct mines).

The closure plan indicates that the land will be returned to grazing after opencast mining and where feasible arable after underground mining (Shangoni, 2019). Considering the above, it is recommended that the discard facility be rehabilitated to grazing final land use capacity.

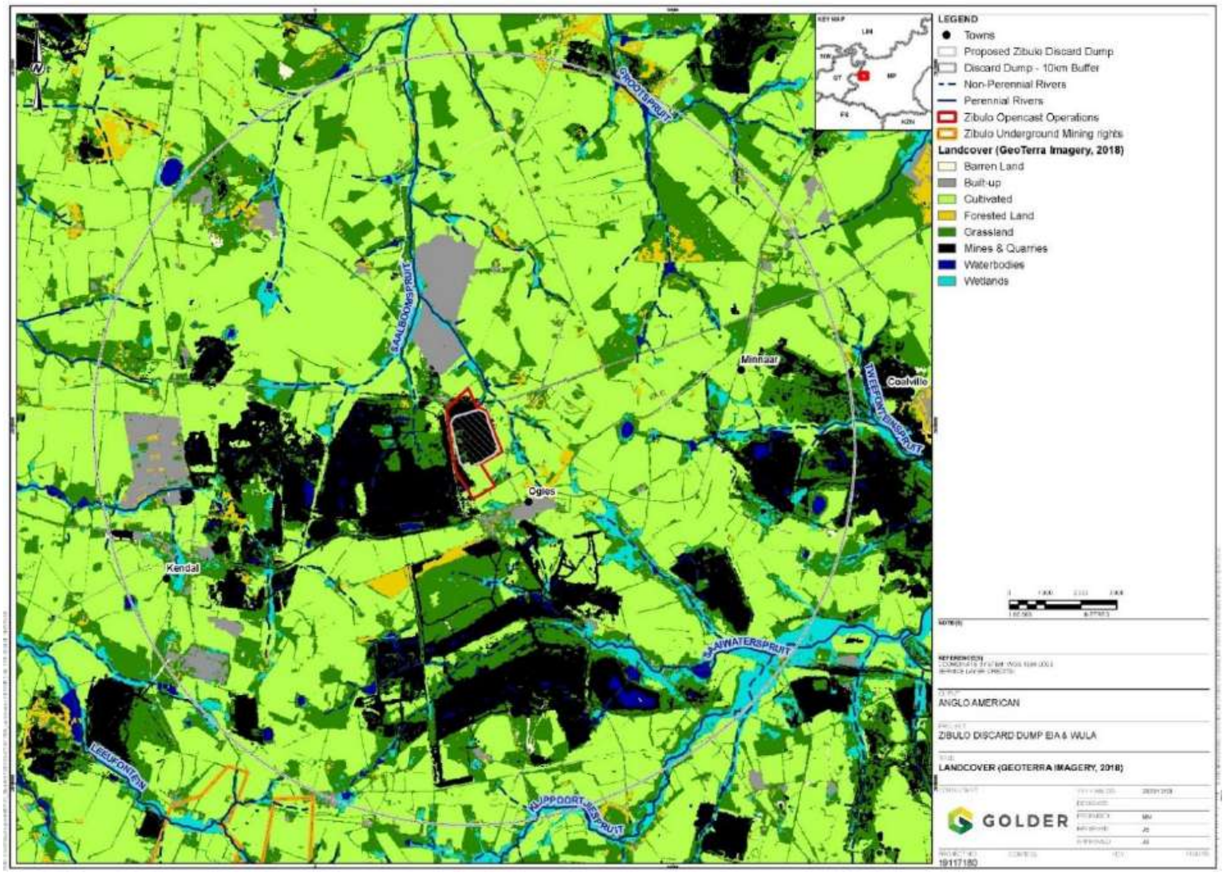


Figure 3: Local land use and cover (2018) surrounding Zibulo

CLOSURE PLANNING

11.0 SCREENING LEVEL RISK ASSESSMENT

11.1 Methodology

To ensure that the discard facility rehabilitation is considered within the site context, a screening level environmental risk assessment (ERA) was undertaken as part of this closure assessment. The ERA is qualitative in nature and compiled through the identification risks, risk drivers and the resulting impacts. The following definitions apply:

- Aspect – typical broad categories utilised for closure objective setting;
- Driver/root cause - fact, activity or event giving rise to a potential risk of not achieving the closure objectives (relates mainly to the implementation / lack of implementation of specific closure measure in terms of the respective categories and subcategories below); and
- Resultant impacts - manner in which an undesirable event harms closure objective in terms of the respective receptors.

Table 1: Screening level risk assessment for closure of Zibulo discard facility and associated infrastructure

Aspect	Risk driver	Consequence/unwanted event	Mitigation
End land use	Land use and land capability targets not met	■ Post mining landform gradients too steep ■ Insufficient topsoil quantity ■ Insufficient revegetation due to poor rehabilitated soil quality (heavy compaction)	■ Compile a detailed next land use plan as part of the closure plan development in terms of GN R.1147 ■ Develop clear rehabilitation objectives for each area along with implementation plans ■ Update and maintain a life of mine topsoil balance for Zibulo ■ Update the site-wide post mining landform model informed by suitable storm water runoff and erosion modelling ■ Ensure that all interested and affected parties are engaged and buy-in is reached regarding the desired closure state, so that expectations can be managed throughout the operational period ■ Make sure rehabilitation is done according to industry good practice and internal policies and rehabilitation standard procedures are implemented
	Failure to update the current wetland mitigation strategy	■ Rehabilitated areas not free draining into the natural catchment	■ Update the wetland mitigation strategy to take into consideration the changes in the reinstatement of drainage lines due to the development of the proposed discard facility over the backfilled pit
	Failure to manage the land use practices after closure	■ Destruction of vegetation cover, resulting in increased erosion and general failure of rehabilitation measures	■ Clearly define the post mining land use for the rehabilitated dump including specific management measures to ensure the long-term success of the rehabilitation ■ Negotiate and conclude post mining land use agreements with third parties as required

Aspect	Risk driver	Consequence/unwanted event	Mitigation
Landscape viability	Discard facility rehabilitated in isolation	■ The rehabilitated discard facility is not part of a coherent overarching rehabilitation and closure plan for the whole mine ■ Non-alignment with mine wide closure goals and objectives	■ Compile the detailed closure plan and annual rehabilitation plan aligned with GN R. 1147 and incorporate the proposed discard facility into the comprehensive risk-based approach to ensure a coherent approach to setting and achieving closure objectives
	Unsustainable vegetation covers on the final landform	■ Compaction and decline in topsoil structure during stripping, stockpiling and topsoil re-placement ■ Ineffective soil amelioration resulting in poor vegetation establishment ■ Loss of topsoil through erosion at stockpiles, pit edges and rehabilitated areas ■ Lack of rehabilitation-related post closure monitoring to support site relinquishment ■ Extensive unvegetated areas, resulting in excessive dust generation (nuisance dust) with unwanted impacts on surrounding environment, agriculture, and neighbours	■ Make sure rehabilitation is done according to industry good practice and internal policies and rehabilitation standard procedures are implemented, including but not limited to: ▪ Proper stripping and placement methodologies to limit compaction ▪ Compaction alleviation through effective ripping and scarifying ▪ Implement site specific soil amelioration based on dedicated sampling, analysis, and interpretation of results ▪ Implement a monitoring programme designed to identify short comings and address them timeously
	Topsoil contamination with hydrocarbons and chemical	■ Soil contamination resulting in reduced soil fertility and land	■ Define no-go areas during construction to limit activity to the affected footprint

Aspect	Risk driver	Consequence/unwanted event	Mitigation
	compounds from mechanical equipment	capability and potential contamination of surface water runoff	■ Ensure good practice in terms of servicing and rotating mass earth works equipment is implemented ■ Make sure rehabilitation is done according to industry good practice and internal policies and rehabilitation standard procedures are implemented
Biodiversity	Insufficient control of alien invasive species on rehabilitated land	■ Loss of biodiversity due to proliferation of alien invasive species	■ Implement the revegetation measures as soon as possible following topsoil placement ■ Implement monitoring and maintenance of all rehabilitated areas for at least a period of 10 years ■ Implement and actively update the site wide Biodiversity Action Plan (BAP) and actively remove alien invasive species and manage regrowth
Groundwater contamination	Acid mine drainage or metal leaching/contaminated seepage from discard facility and rehabilitated pit	■ Surface and groundwater contamination and associated health and safety concerns for groundwater users (surrounding communities)	■ Pump and treat affected water for beneficial reuse or discharge back into the catchment via the existing dedicated treatment system
Surface water contamination	Contamination due to surface water runoff from uncovered/unrehabilitated areas of the discard facility	■ Poor surface water quality of the Wilge river and other nearby surface water resources	■ Implement storm water management measures as per the engineering design, to ensure clean and dirty water separation ■ Ensure concurrent rehabilitation is implemented during the life of the mine to methodically achieve the discard facility and associated infrastructure closure objectives over time ■ Ensure that the mine water balance is regularly updated

CLOSURE COST DETERMINATION

12.0 CLOSURE COSTS

This section provides details on the proposed discard facility closure costs. Only the rehabilitation costs for the scheduled closure of the facility have been determined. These will have to be incorporated into the overall site wide closure plan and costing.

12.1 Unit rates

The unit rates for general rehabilitation and closure measures and activities were obtained from Golder's existing database in consultation with demolition and earthworks contractors, as well as with rehabilitation practitioners. Golder undertakes a thorough review of its unit rate database, as follows:

- Minor unit rates are adjusted with standard inflation, with confirmation generally occurring annually;
- Key rates for the dismantling of infrastructure are benchmarked by a specialised demolition contractor, to ensure that it remains market-related and take account of the latest dismantling and demolition techniques;
- Earthworks rates are benchmarked against recent tenders available to Golder as well as benchmarking in discussions with contractors; and
- Aggregated rates dependent on base infrastructure or earthworks related rates are recalculated given the latest base rates.

The unit rates applied in the closure cost estimate were updated as at March 2021 at a 3.3% escalation from March 2020. The ripping rate applied for haul roads was supplied by Anglo through BBT mining and it was assumed that ripping will be done through a grader.

12.2 Closure cost assessment

The closure measures as per the GN R.1147 Regulations, where applicable, are reflected in Table 2.

Table 2: Closure measures as per the GN R. 1147 regulation (where applicable)

Aspect	Closure Measures
Infrastructural areas	
Steel structures, reinforced concrete structures, buildings and related structures and infrastructure	**Concrete channels** ■ Will be left behind to transport any seepage from discard facility into the sump/final void
Roads	**Service road next to conveyor and surrounding discard facility** ■ Rip to alleviate compaction and shape footprint area to be free-draining, aligned to site-wide routing ■ Establish vegetation by applying suitable seed mix
Conveyor belt	■ Dismantle overland conveyor belt infrastructure and salvage scrap metal where possible ■ Demolish concrete plinths and dispose of in discard dump runoff channel prior to rehabilitation

Aspect	Closure Measures
	■ Safely dispose of rubber belts at appropriate facility ■ Remove carbonaceous veneer and dispose of on discard dump prior to rehabilitation ■ Rip to alleviate compaction ■ Establish vegetation by applying suitable seed mix
Fences	■ Not applicable
Demolition waste	
Disposal of demolition waste	**<u>Concrete demolition waste</u>** ■ Crush 50% of concrete demolition waste ■ Backfill previously excavated material dozed over **<u>Steel</u>** ■ Recycle waste that can be recycled/salvaged (e.g. steel) after decontamination **<u>Hazardous waste</u>** ■ Transport hazardous waste to Holfontein hazardous waste disposal facility
Mining areas	
Rehabilitation of final voids and ramps	■ Not applicable
Sealing of shafts, adits and inclines	■ Not applicable
Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	**<u>Discard facility</u>** ■ Remove concrete channels ■ Shape the top surface to be free draining ■ Apply soil cover/capping material to a depth of 520 mm ■ Establish vegetation on the entire surface of landform
Rehabilitation of dirty water impoundments	**<u>Final void (Sump)</u>** ■ Remove 300 mm deep coal contaminated sediment and dispose of in the discard facility ■ Remove 300 mm coal contaminated subsoils ■ Backfill basin and shape area to be free draining ■ Topsoil placement to 500 mm over rehabilitated area ■ Rip to alleviate compaction ■ Establish vegetation by applying suitable seed mix
General surface rehabilitation	
General surface rehabilitation	**<u>Rehabilitated and reshaped areas</u>**

Aspect	Closure Measures
	■ Restore land to the agreed land capability by reinstating a free-draining surface topography and placing sufficient soil/growth medium and revegetate **<u>Vegetation</u>** ■ Establish vegetation by applying suitable seed mix; and continue with alien plant eradication programme by cutting and/or use of herbicides
Water management	
Re-instatement of drainage lines	■ No measures applied as it has been assumed general surface rehabilitation shaping will account for the drainage lines and free draining
River diversion	■ Not applicable (assumed included in site-wide closure plan and costs)
Pre-site relinquishment monitoring and aftercare	
From year 1 until year 10 post closure (discard facility rehabilitated and cover installed)	
Rehabilitation monitoring	■ Conduct rehabilitation monitoring for a period of 10 years post-closure (or until site relinquishment criteria have been met)
Care and maintenance	■ Undertake maintenance and aftercare, by: ▪ Applying fertilizer annually over rehabilitated areas ▪ Controlling alien plants ▪ Undertaking general maintenance, including rehabilitation of cracks and subsidence
Settlement monitoring	■ Survey the decommissioned discard facility using a drone/similar technology to monitor settlement twice a year
Stability evaluation	■ Undertake a walk over inspection by a qualified engineer to evaluate stability every second year
Surface water monitoring	■ Monitor surface water for a period of 10 years post-closure (or until site relinquishment criteria have been met)
Groundwater monitoring	■ Monitor groundwater for a period of 10 years post-closure (or until site relinquishment criteria have been met)
From year 11 until 30 post closure	
Settlement monitoring	■ Survey the decommissioned discard facility using a drone/similar technology to monitor settlement annually
Stability evaluation	■ Engage with a qualified engineer to design repair work where significant settlement has occurred and implement repairs to the cover and drainage, on an annual basis

Aspect	Closure Measures
Groundwater quality monitoring	■ Undertake groundwater monitoring of decant and phreatic surface within rehabilitated spoils (as per groundwater monitoring programme)
Additional allowances	
Preliminary and general	■ Additional allowance of 25% P&Gs and 10% contingencies were applied to Subtotal 1

12.3 Closure costs assumptions and qualifications

The following section describes key assumptions that guided the scheduled closure costs for proposed discard dump at Zibulo. Focus was placed on site-specific and newly resolved matters.

12.3.1 Closure costs classification

- Based on the information used, the accuracy of this assessment can be classified to be at a -30% to +50% accuracy.

12.3.2 General costing assumptions

- The closure costs comprise several cost components. This report only addressed the decommissioning and rehabilitation costs, equating to an outside (third-party) contractor establishing on-site and conducting the outstanding rehabilitation-related work on proposed discard facility;
- Based on the above, dedicated contractors would be commissioned to conduct the demolition and rehabilitation work on the site. This would, inter alia, require establishment costs for the contractors and hence, the allowance for preliminary and general (P&Gs) in the cost estimate;
- It was assumed that all metal and steel waste would have been salvaged, although it is expected to be minimal. No allowance was made to offset the salvage value of the scrap metal against the demolition costs;
- Allowance was made for third-party contractors and consultants to conduct care and maintenance work, as well as compliance monitoring, following the rehabilitation of outstanding items; and
- Detailed measures and assumptions were described for the scheduled closure scenario only for the discard facility.

12.3.3 General support infrastructure assumptions

- Although the planned support infrastructure could have salvage or resale value at closure, no cost off-sets due to possible salvage values were considered as part of this costing;
- Assume a temporary normal gravel road with a total length of 4 900 m will be constructed for vehicle movement during discard dump construction phase. The width will be reduced from 20 m to 7.5 m after the construction of the discard facility is completed and will be maintained throughout operations and after closure, to be rehabilitated at the end of the post-closure phase. The rehabilitation includes ripping and revegetation; and
- Final rehabilitation measures applicable to support infrastructure areas were described under general rehabilitation.

12.3.4 Dirty water impoundments

The final void (sump) will receive dirty water from the discard facility and thus the following approach was applied to rehabilitate this sump:

- Collection, transport, and disposal of the coal contaminated sediment into the discard dump;
- Backfilling the sump basin via dozing and cut to fill as required;
- Shape and level the area to be align with the site wide surface water drainage framework;
- Place 500 mm topsoil over the shaped area and rip to alleviate compaction, and
- Establishment of a suitable vegetation cover.

12.3.5 Demolition waste

- It has been assumed that 50%of the inert demolition waste will used to backfill previously excavated material dozed over:
- A 1 km load and haul distance for demolition waste has been applied for the above disposal; and
- If there are any asphalt surfaces, these would be crushed and appropriately stockpiled for sale to a third party for beneficial re-use.

12.3.6 Discard facility

- Assume that at closure:
  - All side slopes of the discard dump facility will be shaped operationally, and no side slope rehabilitation will be required at closure; and
  - At closure, only the top surface will require shaping.
- Profile top of facility to ensure no ponding or erosion occurs;
- Place 520 mm cover/capping soil over the side slopes and top surface and rip to alleviate compaction and
- Establishment of a suitable vegetation cover.

12.3.7 General rehabilitation

- All areas where infrastructure has been removed will be backfilled with 500 mm topsoil, and
- Ripping to alleviate compaction to facilitate effective revegetation has been allowed for across all disturbed areas where topsoil will be replaced.

12.3.8 Post-closure monitoring and maintenance and additional allowances

- From year 1 until year 10 post closure (Discard facility rehabilitated and cover installed):
  - An allowance for rehabilitation monitoring and care and maintenance over all rehabilitated areas has been included for a period of 10 years post-closure;
  - Surface water quality monitoring will be conducted for a minimum period of 10 years, to assess success of the implemented rehabilitation and closure measures
  - Groundwater quality monitoring will be conducted for a period of 10 years, to assess success of the implemented rehabilitation and closure measures

  - Surveys of the closed discard facility will be conducted using a drone or similar technology to monitor settlement twice a year for 10 years post closure
  - A walk over inspection will be undertaken by a qualified engineer to evaluate stability every second year for 10 years post closure
- From year 11 until 30 post closure
  - An annual drone survey of the discard facility will be conducted to monitor and evaluate settlement and other stability aspects from year 11 to 30 years post closure
  - Zibulo will engage with a qualified engineer to design repair work where significant settlement has occurred and implement repairs to the cover and drainage on an annual basis, if required
  - Groundwater monitoring of decant and phreatic surface will be conducted within rehabilitated spoils (as per groundwater monitoring programme) closure

12.3.9 P&Gs and Contingencies

- P&Gs are applied at 25% and contingencies at 10%.

12.4 Rehabilitation and closure costs

The scheduled closure costs for the proposed discard dump and associated support infrastructure, as at March 2021, amount to approximately **R 92.5 million** (including P&Gs and contingencies, and excluding VAT), as summarised in Table 3. The detailed costing spreadsheet is provided in APPENDIX B.

Table 3: Scheduled closure costs summary for the discard facility and associated support infrastructure at Zibulo

Zibulo Colliery Discard Facility Closure Costs, as at March 2021			
Closure components		**Scheduled Closure**	
1	Infrastructural aspects	R	3,157,732
2	Mining aspects	R	41,583,977
3	General surface rehabilitation	R	8,114,313
	Sub-Total 1	**R**	**52,856,022**
5	**Post-Closure Aspects**		
From year 1 until year 10 post closure (Discard facility rehabilitated and cover installed)			
5.1	Rehabilitation monitoring of rehabilitated areas	R	761,852
5.2	Care and maintenance of rehabilitated areas	R	10,977,839
5.3	Care and maintenance of rehabilitated areas	R	1,025,110
5.4	Settlement monitoring	R	2,000,000
5.5	Stability evaluation	R	259,000
5.6	Surface water monitoring	R	972,311
5.7	Groundwater monitoring	R	733,914
From year 11 until year 30 post closure			
5.8	Settlement monitoring	R	2,000,000

Zibulo Colliery Discard Facility Closure Costs, as at March 2021			
5.9	Stability evaluation	R	1,036,000
5.10	Groundwater quality monitoring	R	1,467,827
	Sub-Total 2	**R**	**21,203,852**
6	**Additional Allowances**		
6.1	Preliminary and general	R	13,214,006
6.2	Contingencies	R	5,285,602
	Sub-Total 3	**R**	**18,499,608**
	Grand Total **Excl. VAT. (Sub-total 1 +2 +3)**	**R**	**92,559,483**

12.4.1 Post-closure water treatment costs

The long-term costs for pumping and treating extraneous groundwater have not been determined in this assessment as it is assumed that these have been included in the Zibulo site-wide closure costs.

13.0 ACTIONS REQUIRED

The following actions are required to improve the resolution of the closure planning and costing:

- Update the proposed land preparation, soil amelioration and hydroseeding rates based on site specific soil sampling and analysis;
- Update the wetland mitigation strategy to take into consideration the changes in the reinstatement of drainage lines due to the development of the proposed discard facility over the backfilled pit; and
- Incorporate the planned discard facility into the mine wide closure planning and costing to ensure the alignment of end land use planning and closure objectives.

Signature Page

Golder Associates Africa (Pty) Ltd.

Sibongile Chabalala
Land Use and Closure

Johan Bothma
Land Use and Closure

SC/JB/mc

https://golderassociates.sharepoint.com/sites/104294/project files/6 deliverables/19117180-337522-9_closure costing/reports/june 2021/19117180-337522-9_zibulo_dd_cc_nema_final_29june2021.docx

APPENDIX A

Document Limitations

DOCUMENT LIMITATIONS

This document has been provided by Golder Associates Africa Pty Ltd (“Golder”) subject to the following limitations:

i) This Document has been prepared for the particular purpose outlined in Golder’s proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

ii) The scope and the period of Golder’s Services are as described in Golder’s proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regard to it.

iii) Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

iv) In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder’s opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

v) Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

vi) Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

vii) The Client acknowledges that Golder may have retained sub-consultants affiliated with Golder to provide Services for the benefit of Golder. Golder will be fully responsible to the Client for the Services and work done by all its sub-consultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Golder and not Golder’s affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against Golder’s affiliated companies, and their employees, officers and directors.

viii) This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party because of decisions made or actions based on this Document.

GOLDER ASSOCIATES AFRICA (PTY) LTD

APPENDIX B

Detailed Closure Costs

19117180 Zibulo Colliery Closure Costs, as at March 2021								
Zibulo								
	Closure Component Select	Scheduled Closure						
		Applicable	Quantity	Unit	Unit rate code	Unit rate	Total cost	Notes
	Zibulo							
1	**Infrastructural Areas**							
1.1	**Dismantling of processing plant and related structures**							
1.1.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Dismantling of processing plant and related structures						**R 0.00**	
1.2	**Demolition of steel buildings**							
1.2.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Demolition of steel buildings						**R 0.00**	
1.3	**Demolition of other buildings and structures**							
1.3.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Demolition of other buildings and structures						**R 0.00**	
1.4	**Rehabilitation of roads and paved surfaces**							
1.4.1	Service road surrounding discard dump							
	Rehabilitation of normal gravel road	Yes	36750	/m2	E4	R 7.92	R 291,060.00	Assume a temporary normal gravel road with a total length of 4 900 m will be constructed for vehicle movement during discard dump construction phase. Assume width will be reduced from 20 m to 7.5 m after the construction of the discard facility is completed and will be maintained throughout operations and after closure, to be rehabilitated at the end of the post-closure phase. Includes ripping and revegetation.
1.4.1	Service road next to the conveyor belt							
	Rehabilitation of normal gravel road	Yes	4827	/m2	E4	R 7.92	R 38,229.84	Assume normal gravel road along full length of conveyor. Includes ripping and revegetation
	Sub-total for Rehabilitation of roads and paved surfaces						**R 329,289.84**	
1.5	**Demolition and rehabilitation of conveyor belts**							
1.5.1	Clean-up coal veneers	Yes	724	/m3	H1.5	R 51.19	R 37,064.12	Below the conveyor belt. Assume 100 mm depth and 1.5 m wide
	Load and haul coalveneers to discard facilty for disposal	Yes	724	/m3	M1	R 54.50	R 39,460.73	Assume 3 km Load and haul diistance
	Demolition of discard overland conveyor belt	Yes	4827	/m	D1.1.4	R 547.71	R 2,643,796.17	Conveyor length as supplied by client, assume medium weight covered overland conveyor
	Sub-total for Demolition and rehabilitation of conveyor belts						**R 2,720,321.01**	
1.6	**Other linear Infrastructure**							
1.6.1	Concrete channels							
	Concrete runoff diversion channel around discard dump	Yes	0	/m3	A1.3	R 836.73	R 0.00	Assume channel will be left behind to divert any possible toe seepage from discard facility into the final void/sump at closure. Monitoring and maintenance allowed for under post closure Pre-site Relinquishment Monitoring and Aftercare
	Sub-total for Other linear Infrastructure						**R 0.00**	
1.7	**Disposal of demolition waste**							
1.7.1	Establish salvage yard	No	0	N/A	L1	R 0.00	R 0.00	
1.7.2	Construct decontamination bay	No	0	N/A	L1	R 0.00	R 0.00	
1.7.3	Sorting and screening of demolition waste	No	0	N/A	L1	R 0.00	R 0.00	
1.7.4	Concrete demolition waste							
	Decontamination of concrete	No	0	N/A	L1	R 0.00	R 0.00	
	Crushing of concrete demolition waste	Yes	150	/m3	A3.1	R 223.13	R 33,469.50	Crushing of conveyor plinth concrete to facilitate disposal to landfill
	Transport of concrete demolition waste	Yes	0	/m3	H2.1.3	R 47.52	R 0.00	
	Disposal of demolition waste	No	0	N/A	L1	R 0.00	R 0.00	
1.7.5	Steel demolition waste							
	Decontamination of steel	No	0	/sum	L2	R 0.00	R 0.00	
	Transport of steel demolition waste	Yes	150	/m3	M5	R 336.57	R 50,485.50	Nominal allowance for plinths assumed. Transport conveyor concrete plinth waste to dedicated waste disposal site in Emalahleni (assume 20 km away)
	Disposal of demolition waste	Yes	150	/m3	G5.1.1	R 161.11	R 24,166.50	Cost for disposal at waste disposal site
1.7.6	General demolition waste							
	Transport of waste to dedicated demolition waste disposal site	No	0	/m3	M5	R 336.57	R 0.00	
	Disposal of demolition waste	No	0	/m3	G5.1.1	R 161.11	R 0.00	
1.7.7	Hazardous waste							
	Transport of demolition hazardous waste	No	0	N/A	L1	R 0.00	R 0.00	
	Disposal of demolition hazardous waste	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Disposal of demolition waste						**R 108,121.50**	
1.8	**Making good of infrastructure**							
1.8.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Making good of infrastructure						**R 0.00**	
	Sub-total for Infrastructural Areas						**R 3,157,732.35**	
2	**Mining Areas**							
2.1	**Open pit rehabilitation including final voids and ramps**							
2.1.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Open pit rehabilitation including final voids and ramps						**R 0.00**	
2.2	**Sealing of shafts, adits and inclines**							
2.2.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Sealing of shafts, adits and inclines						**R 0.00**	
2.3	**Rehabilitation of stockpiles and processing residues**							
2.3.1	**Discard facility**							
	Shape the top surface	Yes	43	/ha	G1.3	R 205,308.75	R 8,775,778.80	Final shaping of top of dump once concrete channels have been removed, to ensure free drainage. Assume the side slope to be shaped operationally
	Compact the top surface	Yes	106861	/m3	H5.1	R 28.74	R 3,071,177.96	Assume 250 mm compaction
	Placement of a soil layer to cap the facility	Yes	734767	/m3	H2.1.1	R 39.25	R 28,839,595.33	Placement of 520 mm thick soil layer on the top surface (42.7443ha) and side slopes (98.5570ha) as per engineering specifications, assume all soil placement and revegetation will only occur at closure
	Decommission boreholes once groundwater pumping of discard dump plume has ceased	Yes	4	sum	G3.6.2	R 17,338.91	R 69,355.64	Assume full depth plug (approximately 35 m deep)
	Sub-total for Rehabilitation of stockpiles and processing residues						**R 40,755,907.73**	
2.4	**Rehabilitation of clean water impoundments**							
2.4.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Rehabilitation of clean water impoundments						**R 0.00**	
2.5	**Rehabilitation of dirty water impoundments**							
2.5.1	**Final Void(Sump)**							
	Clean up of contaminated sediments	Yes	2402.1	/m3	H1.5	R 51.19	R 122,963.50	Assume area of 8007m2 as per engineering specifications. Assume contaminated sediments up to a depth of 300 mm
	Clean up of contaminated subsoils	Yes	2402.1	/m3	H1.5	R 51.19	R 122,963.50	Contaminated subsoils up to a depth of 300 mm
	Dispose contaminated material	Yes	2402.1	/m3	H2.1.1	R 39.25	R 94,282.43	Dispose on the discard dump. Assume 1 km distance
	Breach dam wall	Yes	390	/m	G1.8	R 787.92	R 307,288.80	Assume perimeter length = 390 m as per engineering specifications
	Topsoil placement	Yes	0.8007	/ha	G1.4	R 137,905.50	R 110,420.93	
	Shaping and profiling disturbed areas to ensure they are free draining	Yes	0.8007	/ha	G1.1	R 87,611.31	R 70,150.38	
	Sub-total for Rehabilitation of dirty water impoundments						**R 828,069.53**	
2.6	**Rehabilitation of subsided areas**							
2.6.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Rehabilitation of subsided areas						**R 0.00**	

	Closure Component Select	Scheduled Closure						
		Applicable	Quantity	Unit	Unit rate code	Unit rate	Total cost	Notes
	Sub-total for Mining Areas						**R 41,583,977.26**	
3	**General Surface Rehabilitation**							
3.1	**Infrastructural Areas**							
3.1.2	**Discard facility**							
	Ripping to alleviate compaction	Yes	141	/ha	H3.3	R 26,042.31	R 3,679,812.26	Side slopes and top surface, prior to revegetation
	Establish vegetation on the top surface and side slopes	Yes	141	/ha	G2.1.5	R 31,059.72	R 4,388,778.81	Side slopes and top surface
3.1.2	**Final Void(Sump)**							
	Ripping to alleviate compaction	Yes	0.801	/ha	H3.3	R 26,042.31	R 20,852.08	
	Establish vegetation over rehabilitated areas	Yes	0.801	/ha	G2.1.5	R 31,059.72	R 24,869.52	Assume will be revegetated at same time as discard facility
	Sub-total for Infrastructural Areas						**R 8,114,312.67**	
3.2	**Other surface disturbances**							
3.2.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for Other surface disturbances						**R 0.00**	
	Sub-total for General Surface Rehabilitation						**R 8,114,312.67**	
4	**Surface Water Reinstatement**							
4.1	**River diversions and watercourse reinstatement**							
4.1.1	Not applicable	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-total for River diversions and watercourse reinstatement						**R 0.00**	
4.2	**Reinstatement of drainage lines**							
4.2.1	Drainage lines	No	0	N/A	L1	R 0.00	R 0.00	Included in individual footprint rehabilitation
	Sub-total for Reinstatement of drainage lines						**R 0.00**	
	Sub-total for Surface Water Reinstatement						**R 0.00**	
	Sub-Total 1 (for infrastructure and related aspects)						**R 52,856,022.28**	
5	**P&Gs, Contingencies and Additional Allowances**							
5.1	Preliminaries and general	Yes	25	/sum	L2	R 13,214,005.57	R 13,214,005.57	Assumed 25 % of Sub-total 1
5.2	Contingencies	Yes	10	/sum	L2	R 5,285,602.23	R 5,285,602.23	Assumed 10 % of Sub-total 1
5.3	Additional studies	No	0	N/A	L1	R 0.00	R 0.00	
	Sub-Total 2 (for Additional Allowances)						**R 18,499,607.80**	
6	**Pre-site Relinquishment Monitoring and Aftercare**							
	From year 1 until year 10 post closure (Discard facility rehabilitated and cover installed)							
6.1	Rehabilitation monitoring of rehabilitated areas	Yes	146	ha/10yrs	J1	R 5,226.15	R 761,852.47	Rehabilitation monitoring for a duration of 10 years post closure
6.2	Care and maintenance of rehabilitated areas	Yes	146	ha/10yrs	J2	R 75,305.70	R 10,977,839.03	Rehabilitation care and maintenance for a duration of 10 years post closure
6.3	Care and maintenance of rehabilitated areas	Yes	0.87	ha/10yrs	J1	R 1,173,969.15	R 1,025,109.86	Allowance for clean-up of the concrete channels around the discard facility. Assume bottom width =2 m and length of channel 4 366 m
6.4	Settlement monitoring	Yes	20	/sum	N1	R 100,000.00	R 2,000,000.00	Surveys of the closed discard facility using a drone/similar technology to monitor settlement twice a year for 10 years post closure
6.5	Stability evaluation	Yes	5	/sum	N2	R 51,800.00	R 259,000.00	Walk over inspection by a qualified engineer to evaluate stability every second year for10 years post closure
6.6	Surface water quality monitoring	Yes	10	/yr	K1	R 94,231.09	R 942,310.90	
6.7	Groundwater quality monitoring	Yes	10	/yr	K2	R 73,391.34	R 733,913.40	Ground water monitoring of decant and phreatic surface within rehabilitated spoils (as per groundwater monitoring programme)
	From year 11 until year 30 post closure							
6.8	Settlement monitoring	Yes	20	/sum	N1	R 100,000.00	R 2,000,000.00	Annual drone surveys of dump to monitor and evaluate settlement and other stability aspects from year 11 to 30 years post closure
6.9	Stability evaluation	Yes	20	/sum	N2	R 51,800.00	R 1,036,000.00	Engage with a qualified engineer to design repair work where significant settlement has occurred and implement repairs to cover and drainage, if required from year 11- 30 post closure
6.1	Groundwater quality monitoring	Yes	20	/yr	K2	R 73,391.34	R 1,467,826.80	Groundwater monitoring of decant and phreatic surface within rehabilitated spoils (as per groundwater monitoring programme)
	Sub-Total 3 (for Post-Closure aspects)						**R 21,203,852.46**	
	Grand Total Excl. VAT. (for Sub-total 1 +2 +3)						**R 92,559,482.54**	

golder.com

14 December 2020 Project No. 19117180 Letter 002

Regional Manager: Mpumalanga Region
Department of Mineral Resources and Energy
Nelson Mandela Drive
Saveways Crescent Centre
Witbank
1035

DMRE Reference number: MP 30/5/1/2/2/338 MR

ANGLO AMERICAN INYOSI COAL (PTY) LTD: SCREENING TOOL ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF A DISCARD FACILITY AT ZIBULO COLLIERY OPENCAST SECTION, MINING RIGHT MP 30/5/1/2/2/338 MR

Dear Regional Manager

A screening tool assessment in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) (as amended) has been conducted for the proposed development of a discard facility at Zibulo Colliery Opencast Section. The results of the assessment, as well as the environmental assessment practitioner's (EAP's) response, are provided in Table 1. See Attachment 1 for the full report.

Table 1: Screening tool assessment results

No.	Specialist Study	EAP Response
1	Agricultural impact assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery, to be cleared and mined out. The proposed conveyor will be located along existing infrastructure (conveyors and roads), and hence will not be impacting on any virgin land.
2	Landscape/visual impact assessment	This study will be conducted as part of the EIA process for the proposed discard facility.
3	Archaeological and cultural heritage impact assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery, to be cleared and mined out. The proposed conveyor will be located along existing infrastructure (conveyors and roads), and hence will not be impacting on any virgin land. An exemption from the requirement to do a HIA may however be required and will be applied for as

No.	Specialist Study	EAP Response
		part of the EIA process, should SAHRA indicate such a requirement is necessary.
4	Palaeontology impact assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery, to be cleared and mined out. The proposed conveyor will be located along existing infrastructure (conveyors and roads), and hence will not be impacting on any virgin land. An exemption from the requirement to do a PIA may however be required and will be applied for as part of the EIA process, should SAHRA indicate such a requirement is necessary.
5	Terrestrial biodiversity impact assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery, to be cleared and mined out. The proposed conveyor will be located along existing infrastructure (conveyors and roads), and hence will not be impacting on any virgin land.
6	Aquatic biodiversity impact assessment	This study will be conducted as part of the EIA process for the proposed discard facility.
7	Hydrology assessment	This study will be conducted as part of the EIA process for the proposed discard facility.
8	Noise impact assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery. The proposed conveyor will be located along existing infrastructure (conveyors and roads). Given the nature of the activities and the study area (adjacent to the N12, and surrounded by existing mining and industrial related activities), a specialist noise assessment will not be conducted.
9	Radioactivity impact assessment	This is not applicable to the discard material associated with the project.
10	Traffic impact assessment	The proposed discard conveyor will largely run along the existing conveyor linking the South32 Klipspruit extension project to the PCPP, including along the existing bridge crossing the R545. Therefore, it is not anticipated that the discard conveyor will impact on traffic.
11	Geotechnical assessment	This study will be conducted as part of the engineering design for the proposed discard facility.
12	Climate impact assessment	This study will be conducted as part of the air quality impact assessment that will be conducted for the proposed discard facility.

No.	Specialist Study	EAP Response
13	Health impact assessment	Impacts on human health as a result of air quality impacts on nearby sensitive receptors will be assessed as part of the air quality impact assessment that will be conducted for the proposed discard facility.
14	Socio-economic assessment	This study will be conducted as part of the EIA process for the proposed discard facility.
15	Ambient air quality impact assessment	This study will be conducted as part of the EIA process for the proposed discard facility.
16	Seismicity assessment	Stability risks will be assessed as part of the engineering design for the proposed discard facility.
17	Plant species assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery, to be cleared and mined out. The proposed conveyor will be located along existing infrastructure (conveyors and roads), and hence will not be impacting on any virgin land.
18	Animal species assessment	The proposed discard facility will be located within the mined-out opencast pit, an area already assessed and approved in the original EIA/EMPr for Zibulo Colliery, to be cleared and mined out. The proposed conveyor will be located along existing infrastructure (conveyors and roads), and hence will not be impacting on any virgin land.

Your sincerely

Golder Associates Africa (Pty) Ltd.

Olivia Allen
GOLDER

Dr. Brent Baxter
Principal
GOLDER

Olivia Allen
Environmental Assessment Practitioner

Brent Baxter
Project Director

OA/BB/nbh

Attachments: **Screening Tool Assessment Report for the Discard Facility**

Screening Tool Assessment Report for the Discard Conveyor

https://golderassociates.sharepoint.com/sites/104294/project files/7 correspondence/letters/19117180_let002_anglozibulodd_screeningtoolassess_14dec2020.docx

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number:

Project name: Zibulo Discard Facility

Project title: Proposed Zibulo Discard Facility

Date screening report generated: 09/10/2020 16:33:26

Applicant: Anglo American Coal

Compiler: Golder Associates

Compiler signature:

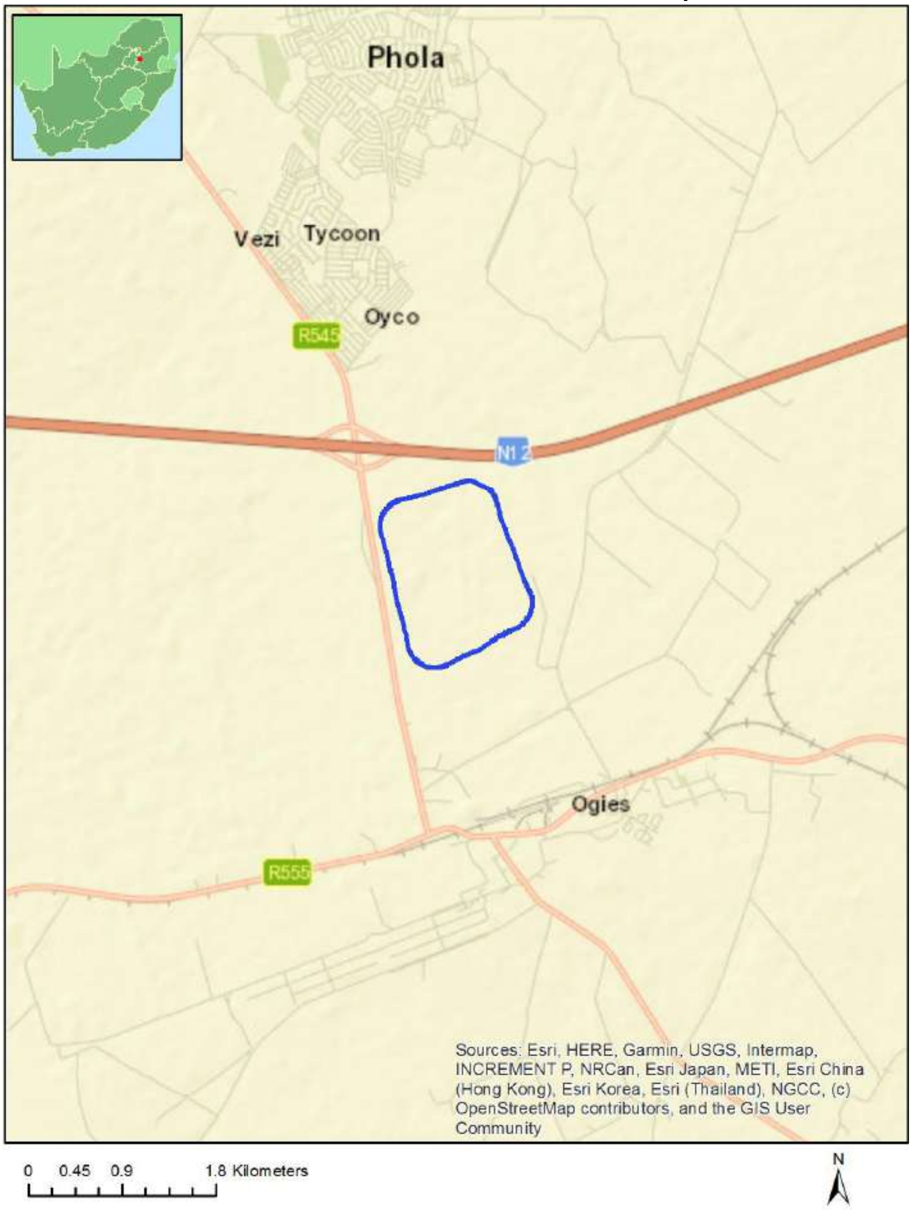
……………………………………………………………………………………………

Table of Contents

Proposed Project Location

Orientation map 1: General location

General Orientation: Zibulo Discard Facility



Map of proposed site and relevant area(s)

Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	ANGLO	828	0	26°2'4.35S	29°2'34.81E	Farm
2	ANGLO	828	0	26°1'49.73S	29°2'34.08E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application

Environmental Management Framework	LINK
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46,_67,_78,_80,_92,_103,_122,_129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: Mining|Mining Right|Mining - Mining Right.

Relevant development incentives, restrictions, exclusions or prohibitions

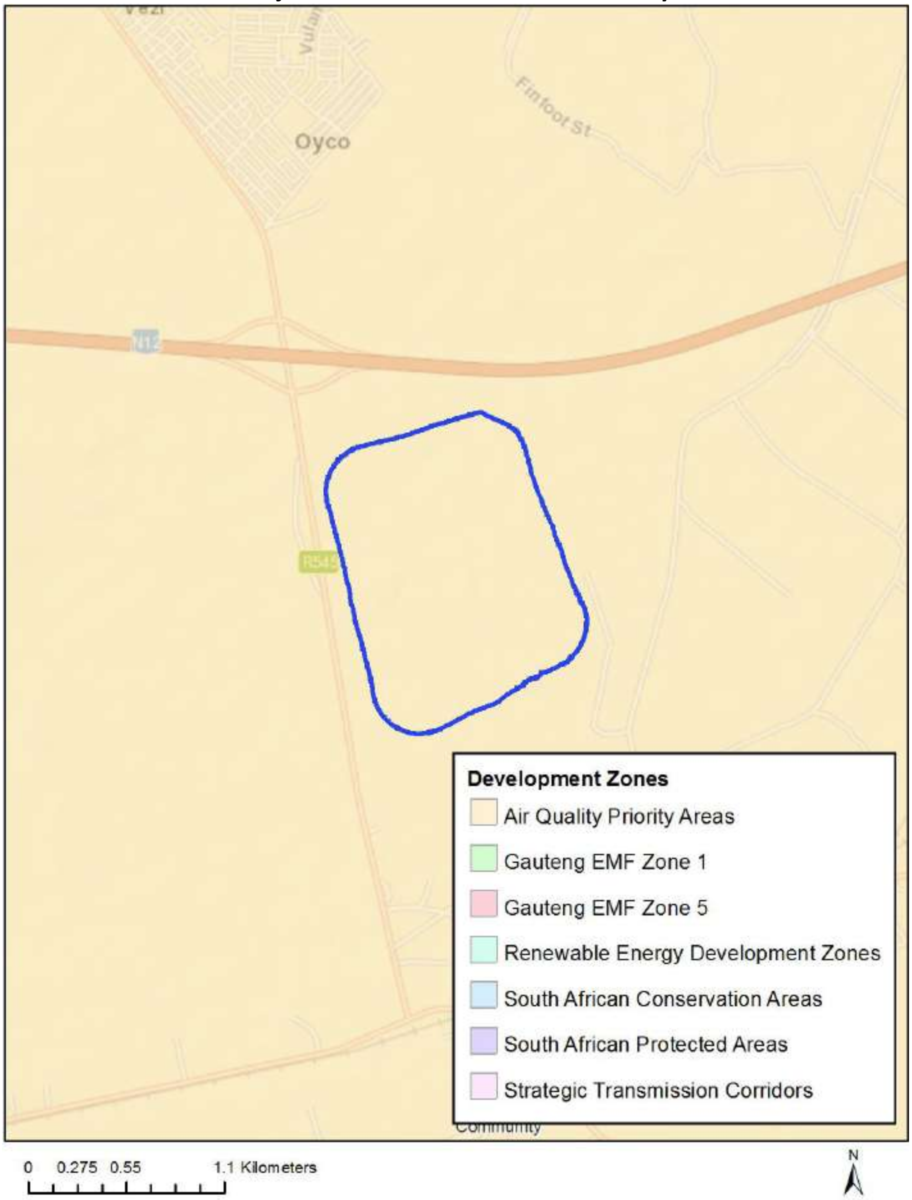
The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication

Strategic Transmission Corridor-International corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Zibulo Discard Facility



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme			X	
Civil Aviation Theme				X
Defence Theme				X
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

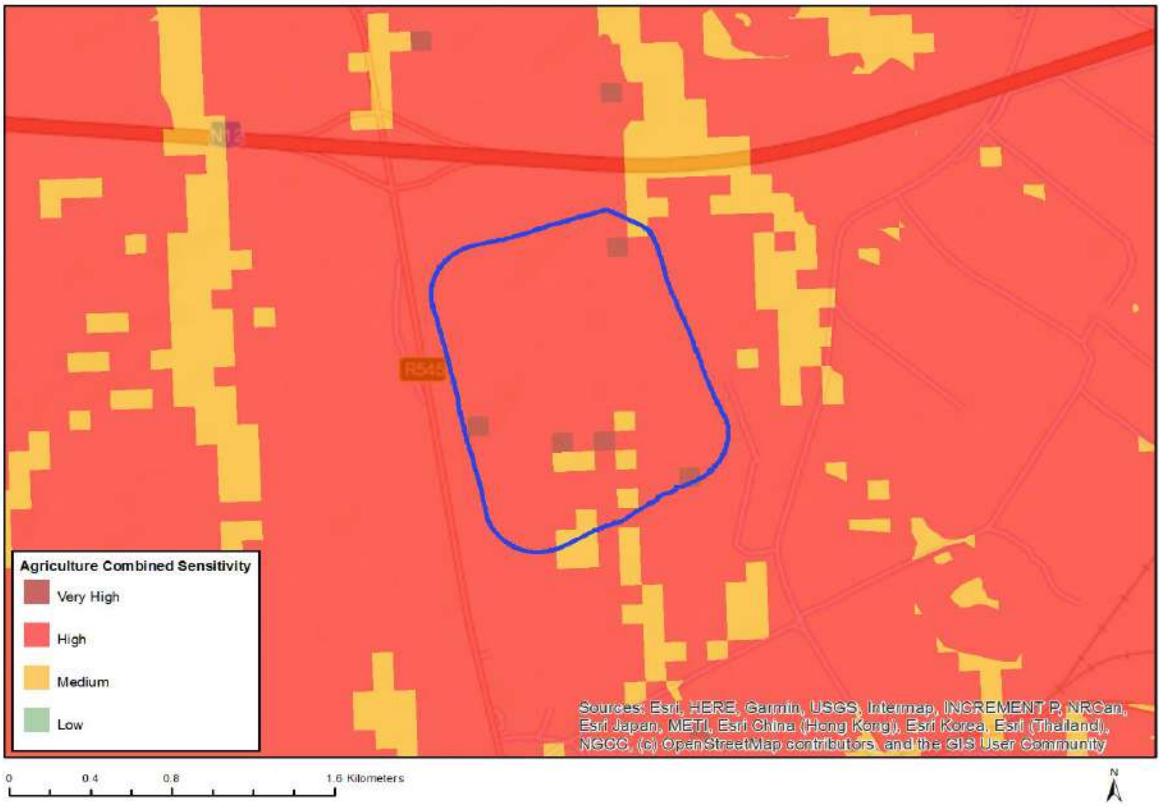
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiver	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf

	sity Impact Assessment	
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
9	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Climate Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
13	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
14	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
15	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
16	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
17	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
18	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

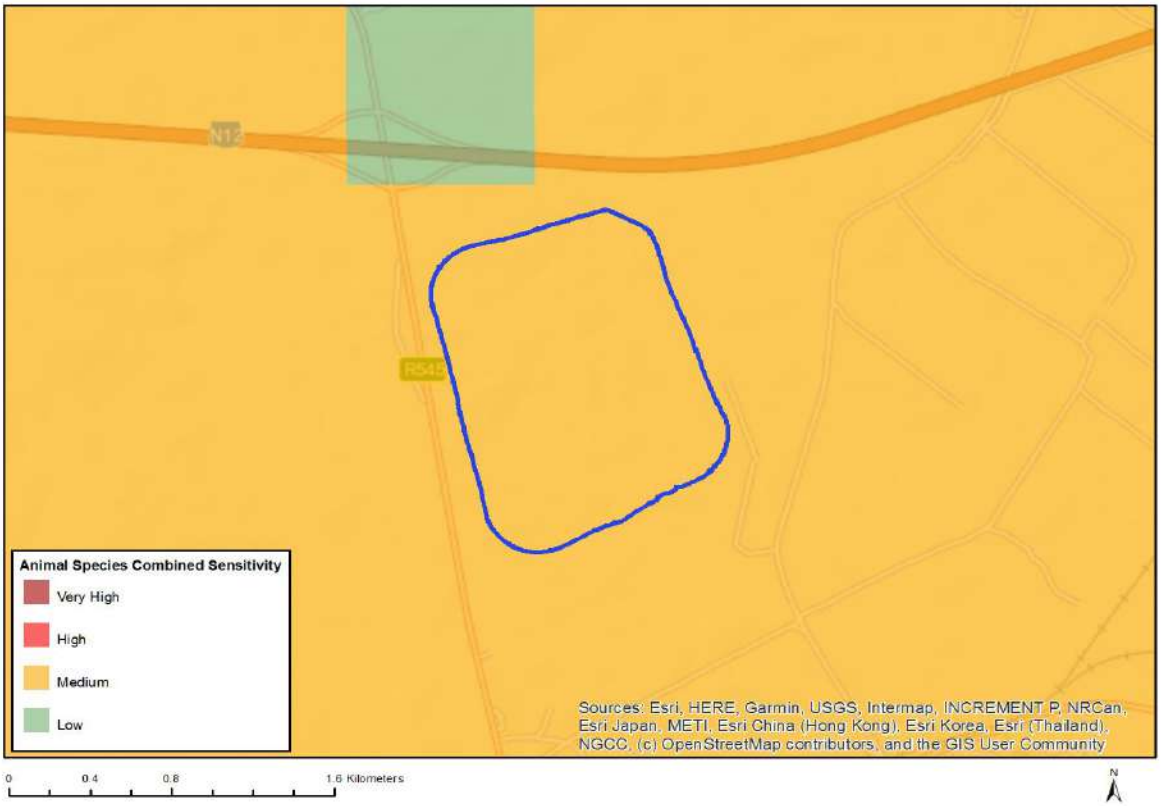


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mammalia-Chrysospalax villosus

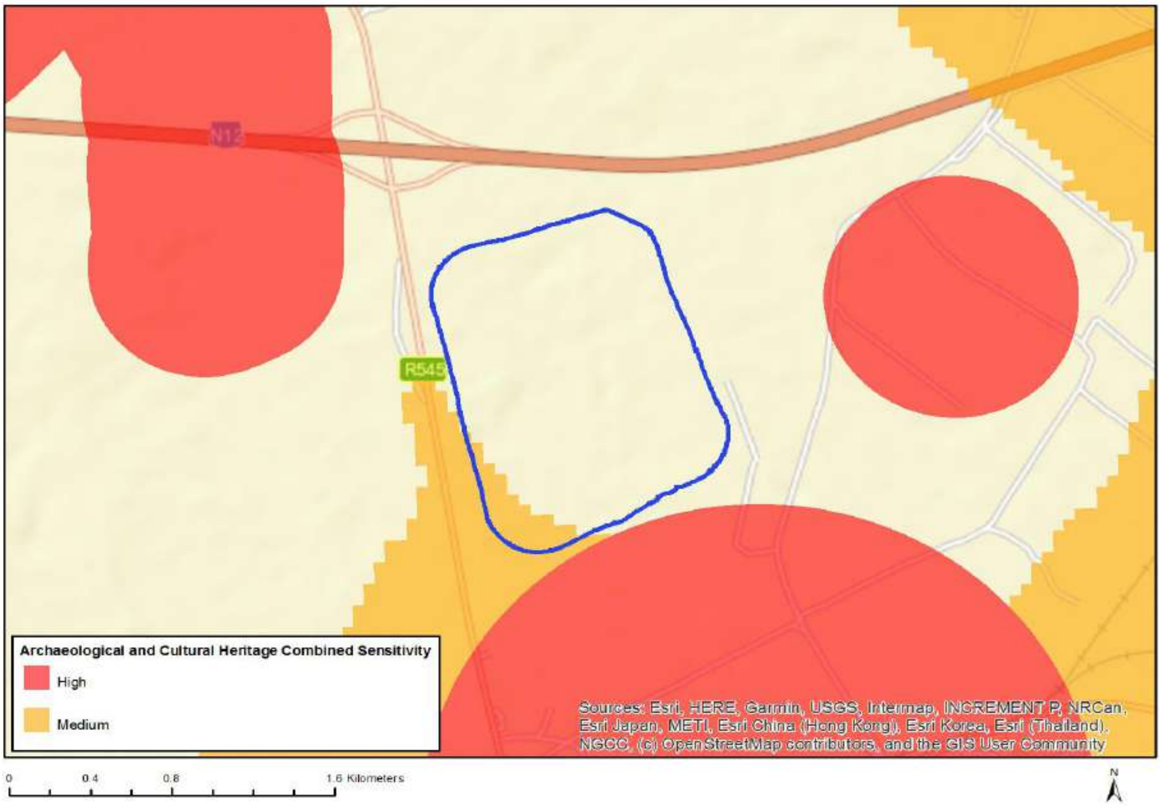
MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mountain or ridge

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

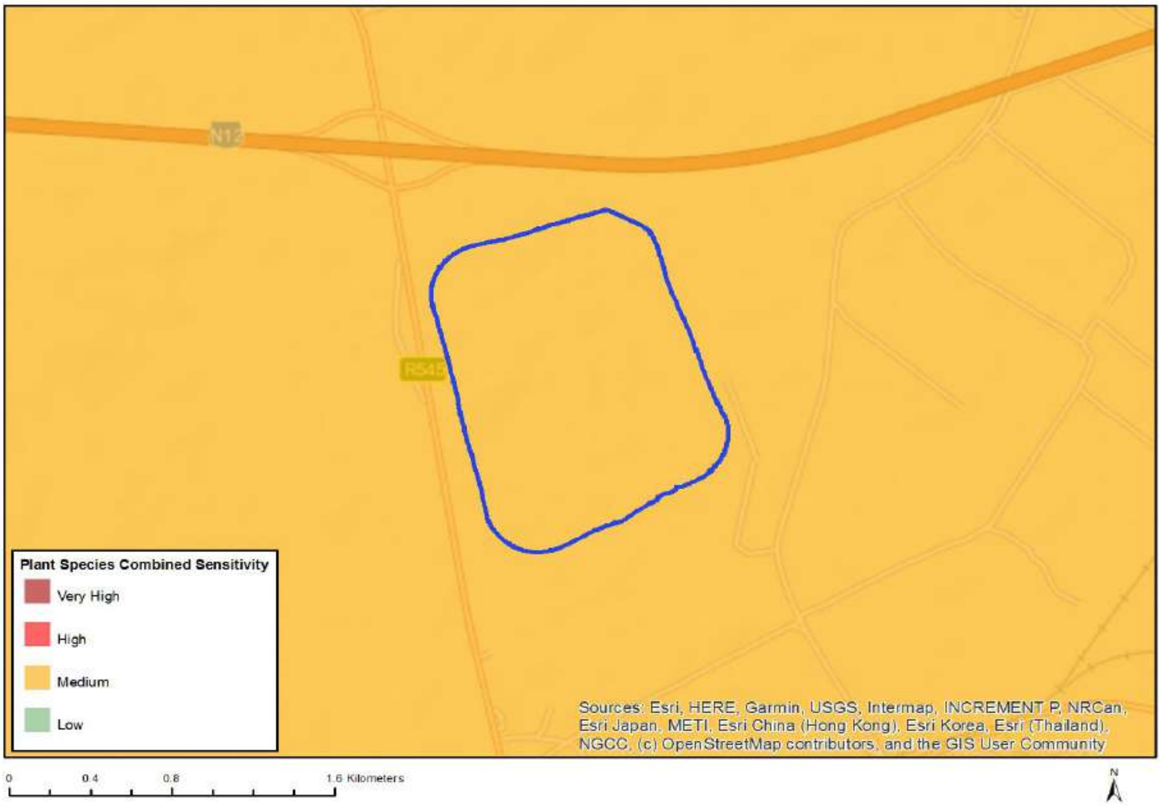
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

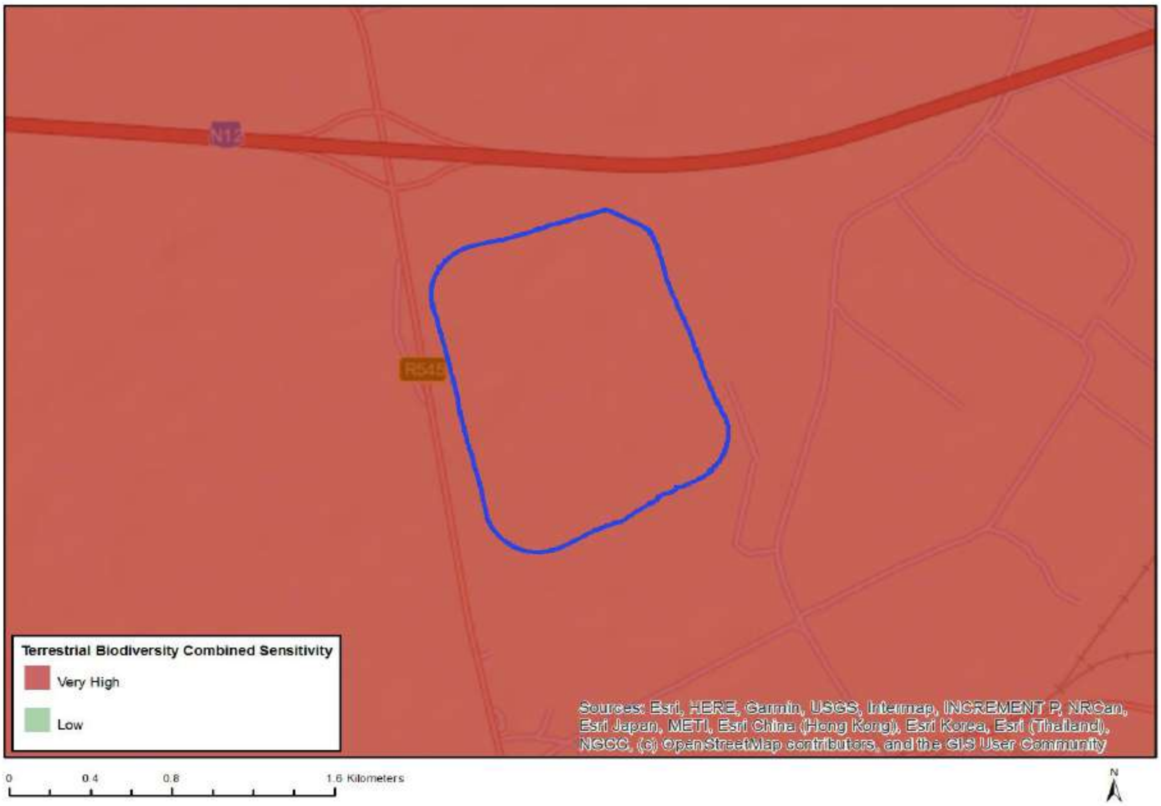


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 411
Medium	Sensitive species 647
Medium	Pachycarpus suaveolens
Medium	Brachycorythis conica subsp. transvaalensis

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Vulnerable ecosystem

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number:

Project name: Zibulo Discard Facility (Potential Overland Conveyor)

Project title: Proposed Zibulo Discard Facility

Date screening report generated: 09/10/2020 16:20:03

Applicant: Anglo American Coal

Compiler: Golder Associate Africa

Compiler signature:

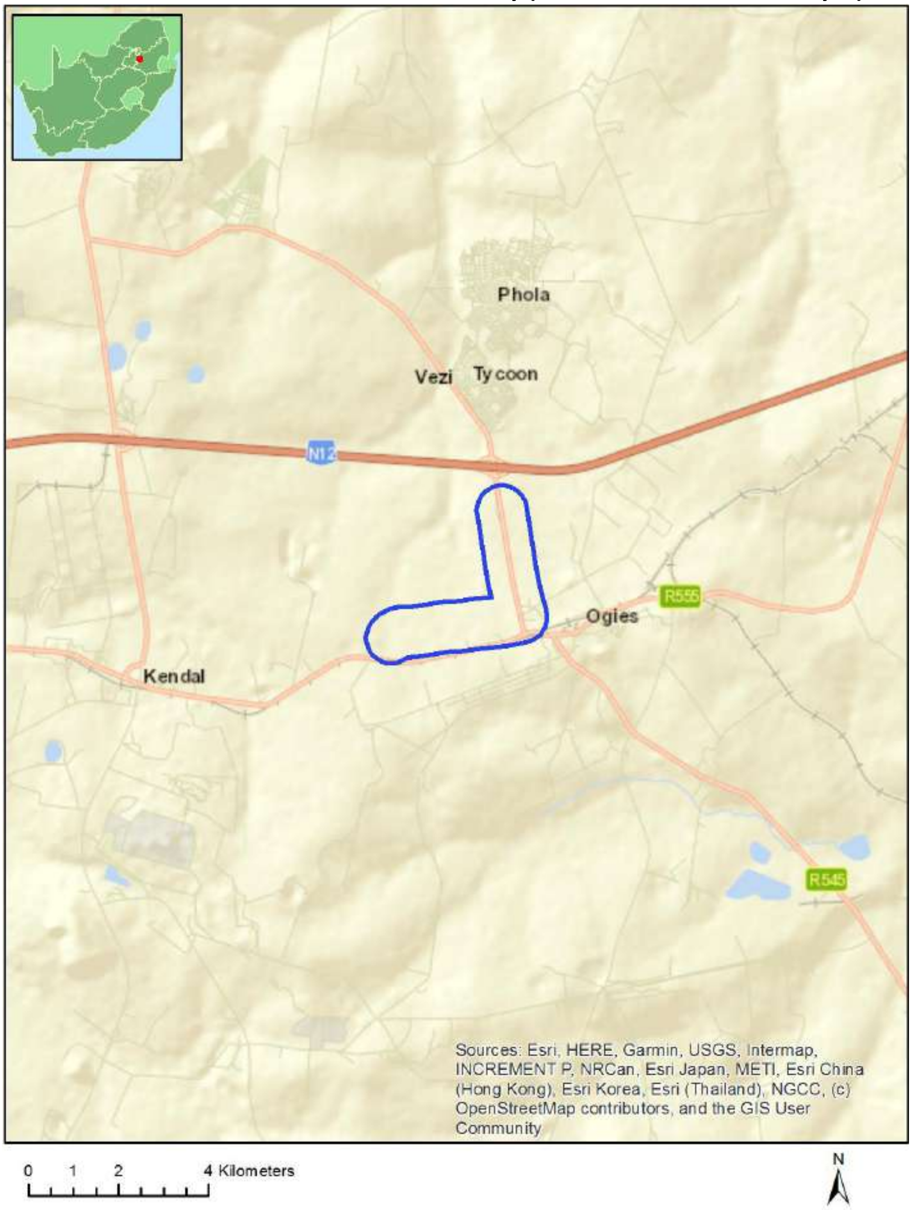
……………………………………………………………………………………………

Table of Contents

Proposed Project Location

Orientation map 1: General location

General Orientation: Zibulo Discard Facility (Potential Overland Conveyor)



09/10/2020

Map of proposed site and relevant area(s)

Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	OGIES	122	0	26°3'7.08S	29°2'45.15E	Erven
2	PHOLA PLANT	830	0	26°3'16.39S	29°0'55.75E	Farm
3	KLIPFONTEIN	3	0	26°2'59.32S	29°1'40.7E	Farm
4	SMALDEEL	1	0	26°2'33.68S	29°0'42.68E	Farm
5	OGGIESFONTEIN	4	0	26°1'45.04S	29°3'32.32E	Farm
6	ANGLO	828	0	26°2'4.35S	29°2'34.81E	Farm
7	PRINSHOF	2	0	26°0'12.63S	29°1'54.4E	Farm
8	KLIPFONTEIN	3	32	26°3'19.64S	29°1'44.84E	Farm Portion
9	KLIPFONTEIN	3	13	26°1'54.09S	29°1'25.18E	Farm Portion
10	OGGIESFONTEIN	4	4	26°2'44.71S	29°3'12.71E	Farm Portion
11	KLIPFONTEIN	3	26	26°3'1.82S	29°2'37.79E	Farm Portion
12	KLIPFONTEIN	3	33	26°3'25.53S	29°0'54.48E	Farm Portion
13	KLIPFONTEIN	3	19	26°3'19.29S	29°2'8.11E	Farm Portion
14	KLIPFONTEIN	3	31	26°3'10.22S	29°2'29.51E	Farm Portion
15	KLIPFONTEIN	3	12	26°2'24.46S	29°1'57.52E	Farm Portion
16	SMALDEEL	1	1	26°3'22.44S	29°0'24.71E	Farm Portion
17	KLIPFONTEIN	3	0	26°3'41.81S	29°1'7.46E	Farm Portion
18	OGGIESFONTEIN	4	43	26°3'5.48S	29°3'11.59E	Farm Portion
19	SMALDEEL	1	4	26°2'47.58S	29°0'39.19E	Farm Portion
20	PRINSHOF	2	14	26°1'8.33S	29°2'24.17E	Farm Portion
21	KLIPFONTEIN	3	14	26°3'5.98S	29°1'28.97E	Farm Portion
22	KLIPFONTEIN	3	30	26°3'7.41S	29°2'40.17E	Farm Portion
23	PRINSHOF	2	14	26°0'54.44S	29°2'37.31E	Farm Portion
24	KLIPFONTEIN	3	11	26°3'20.39S	29°2'29.87E	Farm Portion
25	KLIPFONTEIN	3	35	26°3'7.44S	29°2'25.32E	Farm Portion
26	OGGIESFONTEIN	4	63	26°2'15.58S	29°2'17.62E	Farm Portion
27	ANGLO	828	0	26°1'49.73S	29°2'34.08E	Farm Portion
28	PHOLA PLANT	830	0	26°3'16.39S	29°0'55.75E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

Environmental Management Framework	LINK
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46,_67,_78,_80,_92,_103,_122,_129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: Mining|Mining Right|Mining - Mining Right.

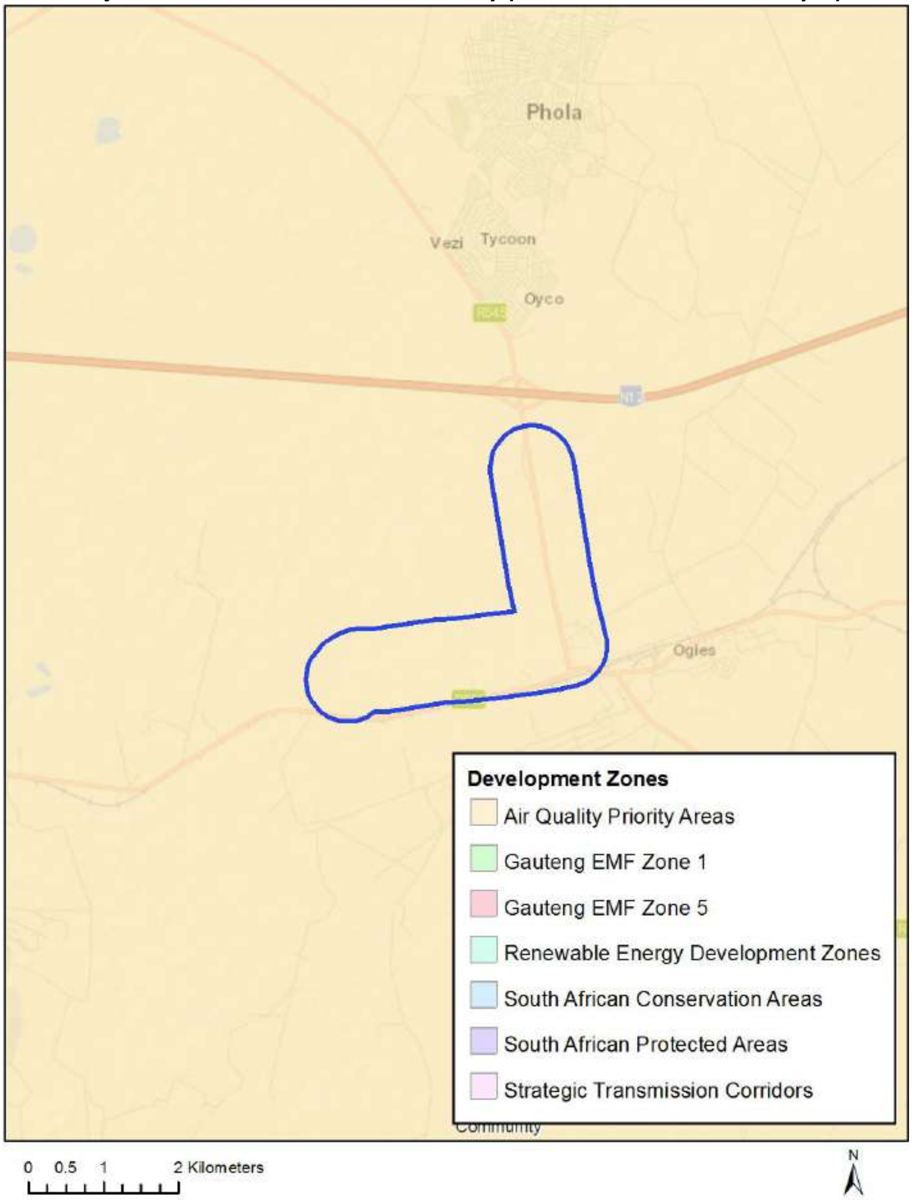
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-International corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Zibulo Discard Facility (Potential Overland Conveyor)



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme				X
Defence Theme				X
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

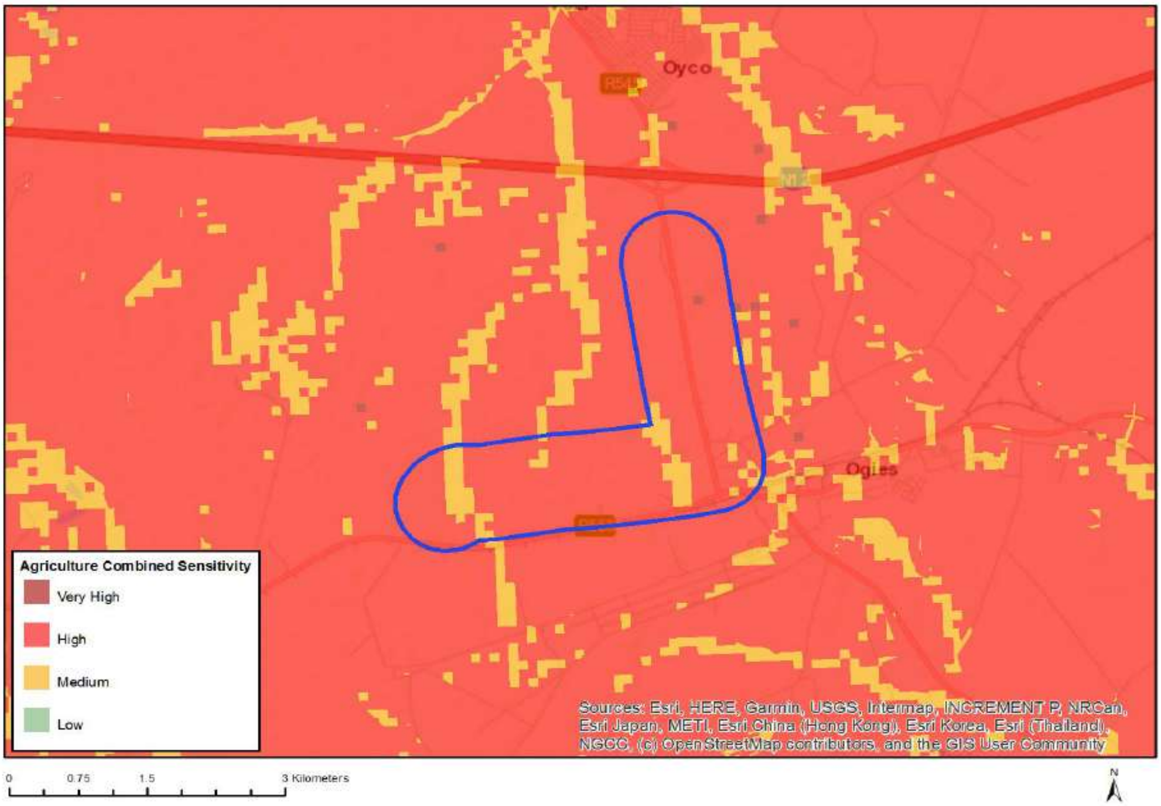
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology Assessm	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

	ent	
8	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
9	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Climate Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
13	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
14	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
15	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
16	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
17	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
18	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

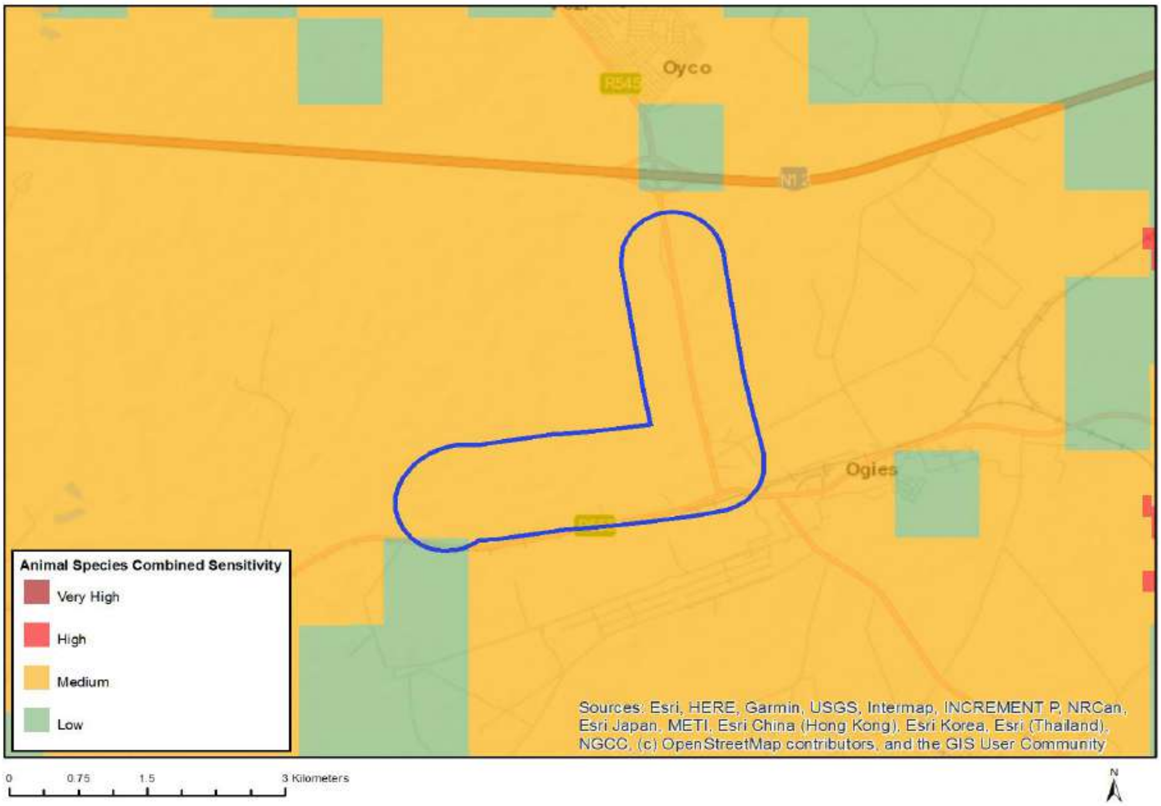


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

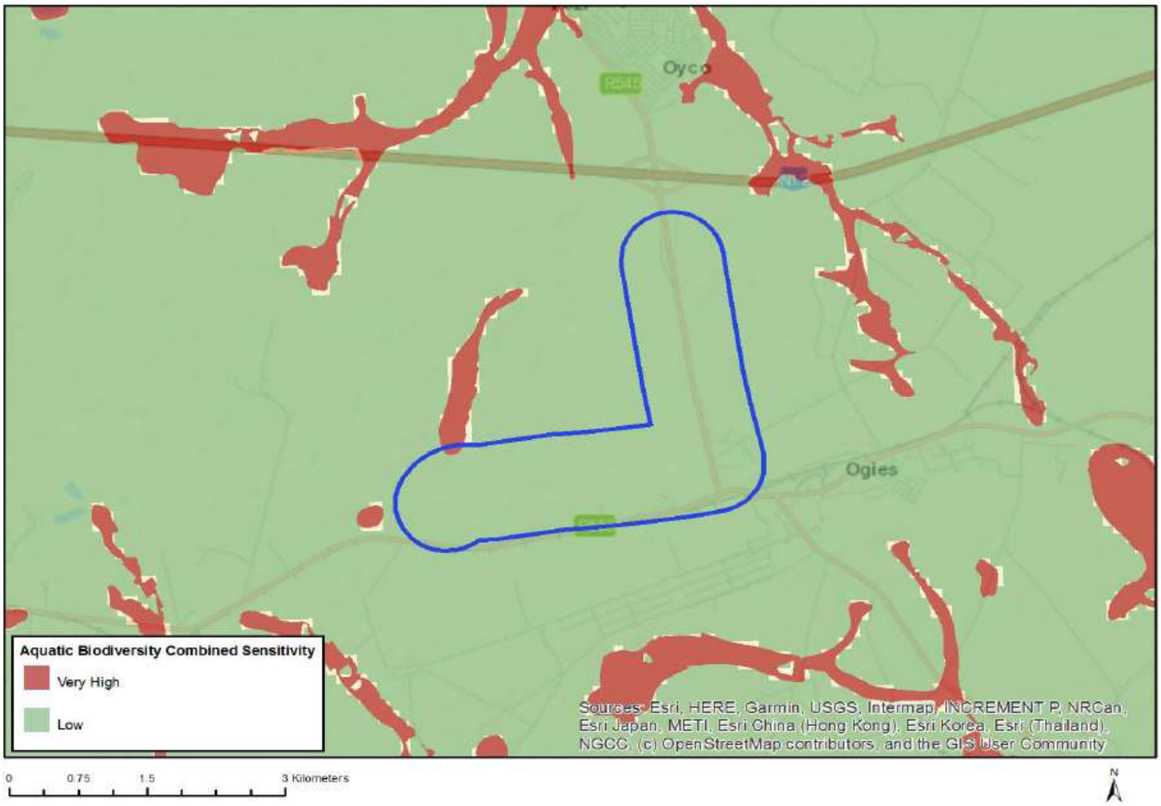


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Ourebia ourebi ourebi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

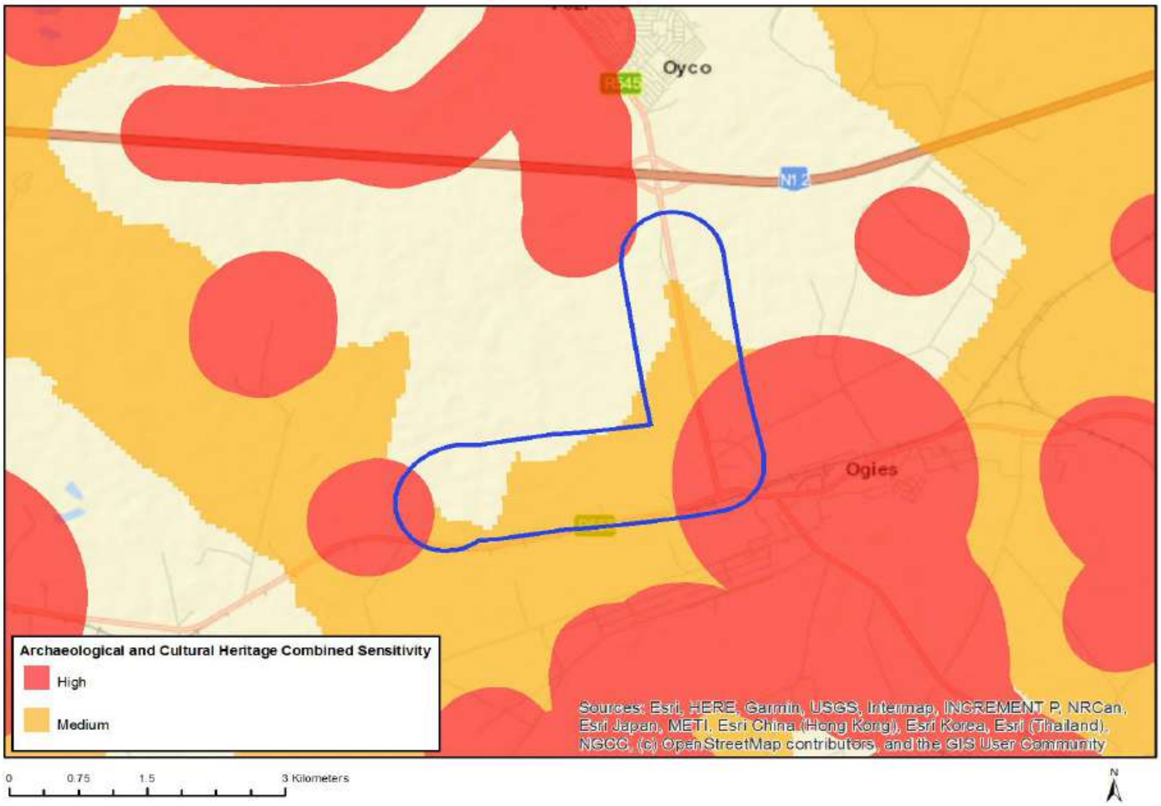


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands and Estuaries

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of an important wetland
High	Within 500 m of a heritage site
Medium	Mountain or ridge

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

Disclaimer applies
09/10/2020

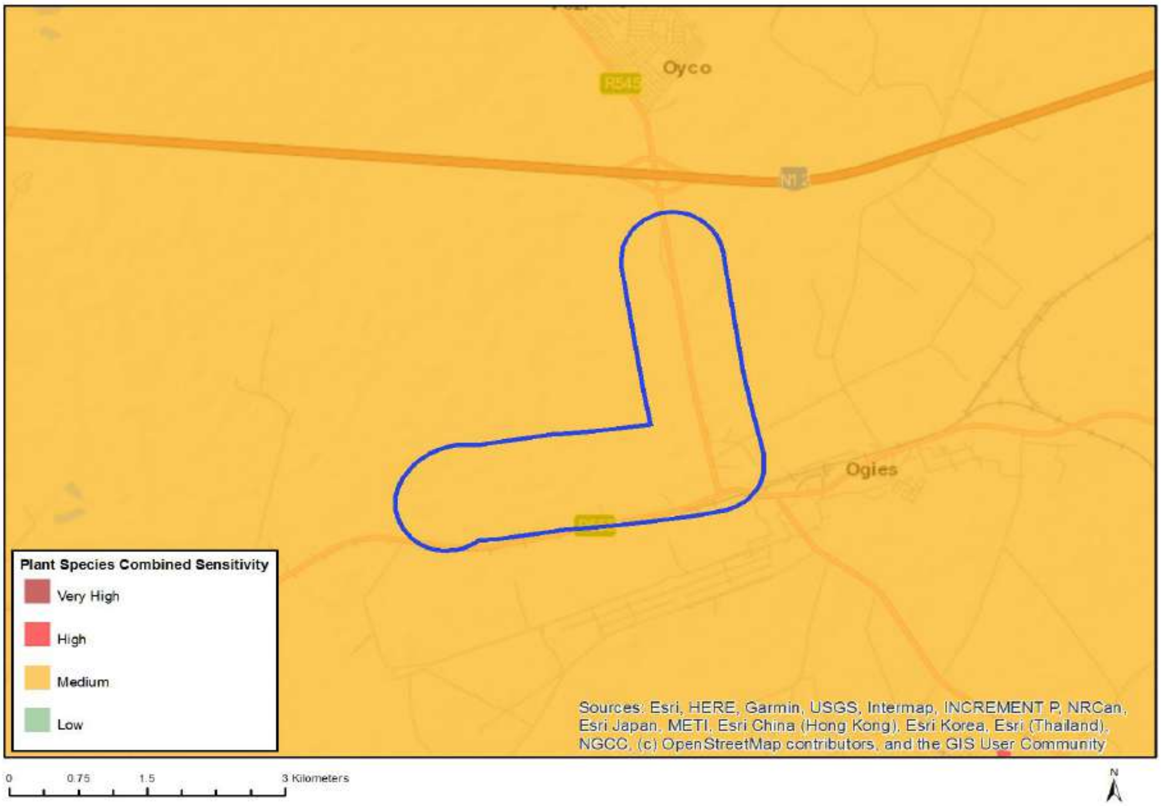
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

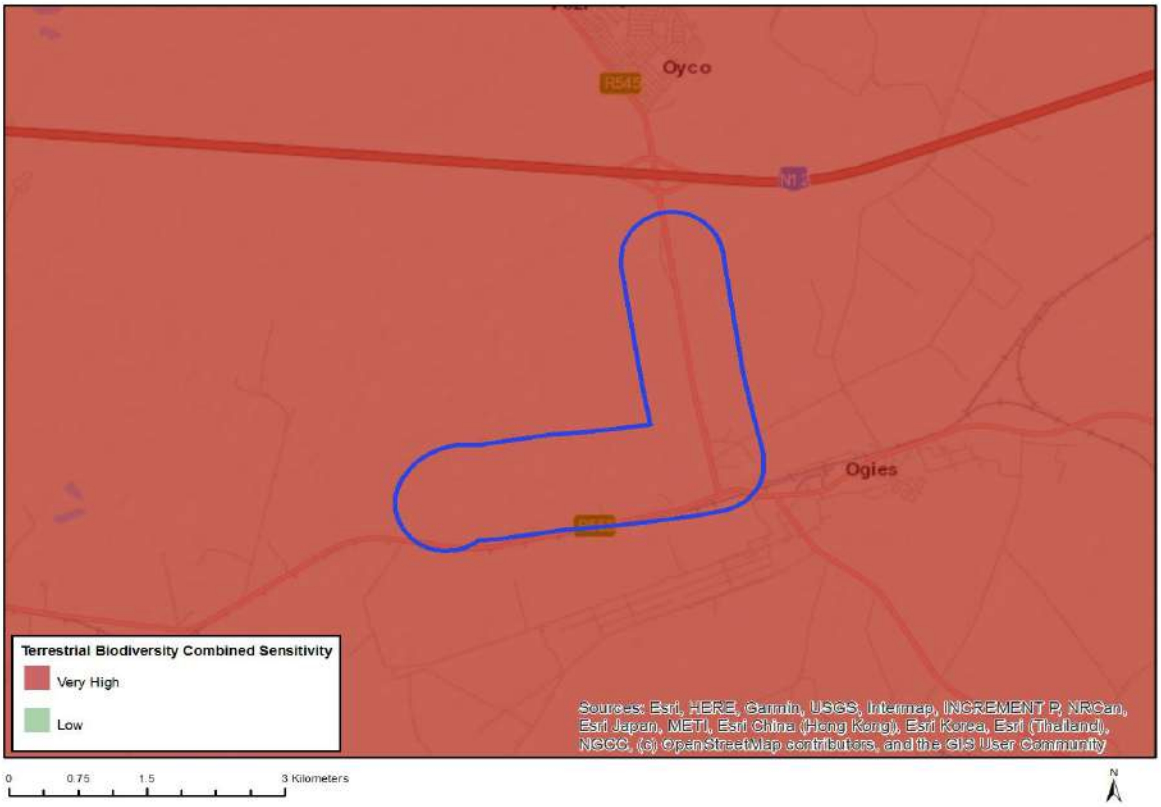


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 411
Medium	Sensitive species 647
Medium	Pachycarpus suaveolens
Medium	Brachycorythis conica subsp. transvaalensis

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Vulnerable ecosystem

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number:

Project name: Zibulo Discard Facility

Project title: Proposed Zibulo Discard Facility

Date screening report generated: 09/10/2020 16:33:26

Applicant: Anglo American Coal

Compiler: Golder Associates

Compiler signature:

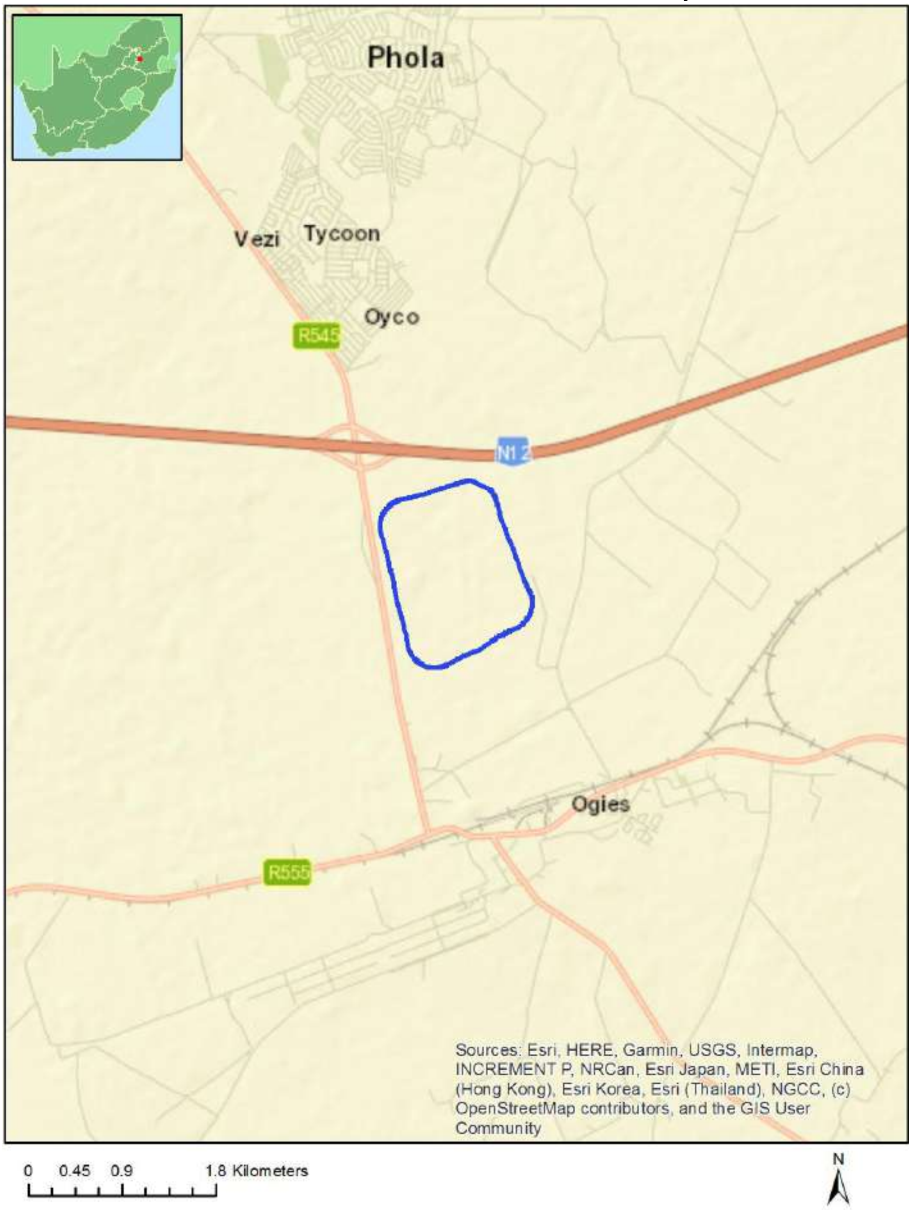
……………………………………………………………………………………………

Table of Contents

Proposed Project Location

Orientation map 1: General location

General Orientation: Zibulo Discard Facility



[Disclaimer applies](#)
09/10/2020

Map of proposed site and relevant area(s)

Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	ANGLO	828	0	26°2'4.35S	29°2'34.81E	Farm
2	ANGLO	828	0	26°1'49.73S	29°2'34.08E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] “development footprint”, means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application

Environmental Management Framework	LINK
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46,_67,_78,_80,_92,_103,_122,_129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: Mining|Mining Right|Mining - Mining Right.

Relevant development incentives, restrictions, exclusions or prohibitions

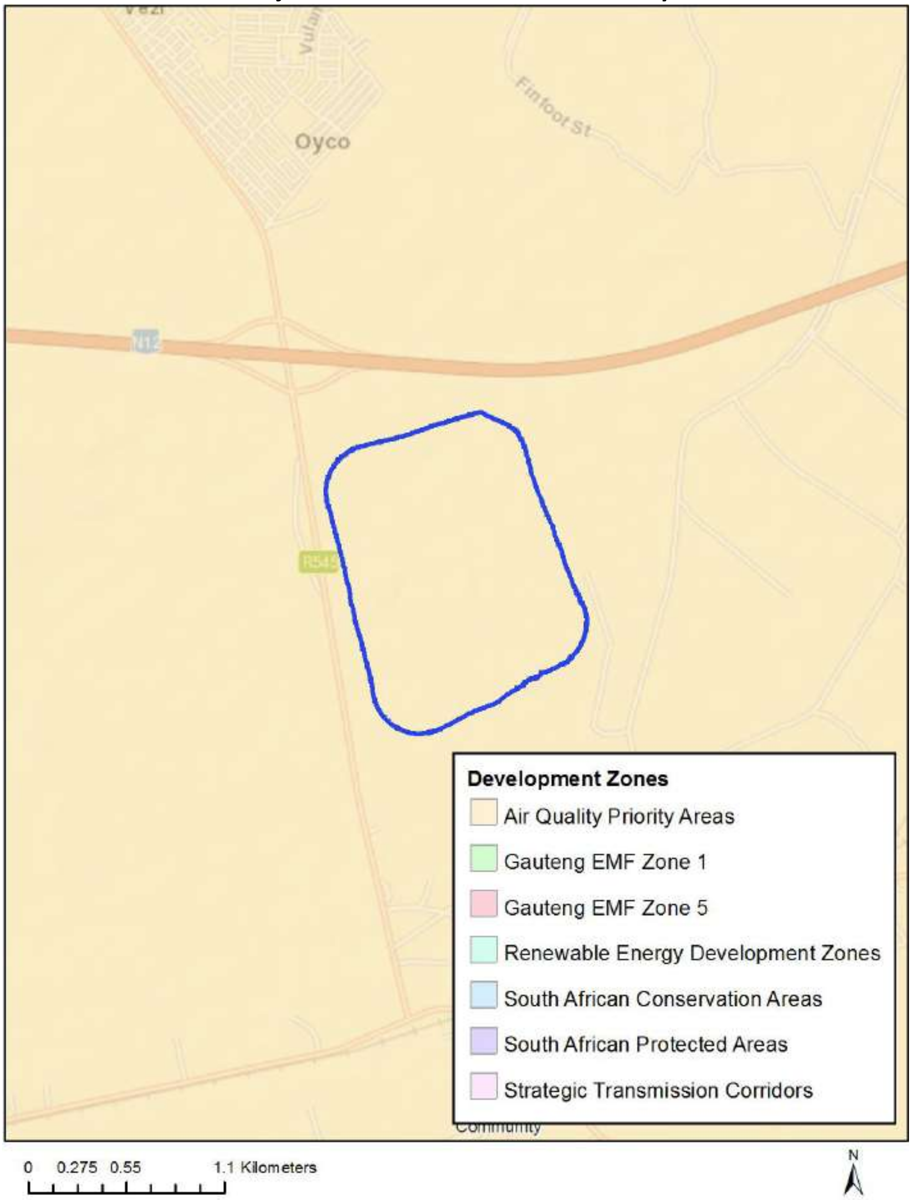
The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication

Strategic Transmission Corridor-International corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Zibulo Discard Facility



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme			X	
Civil Aviation Theme				X
Defence Theme				X
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

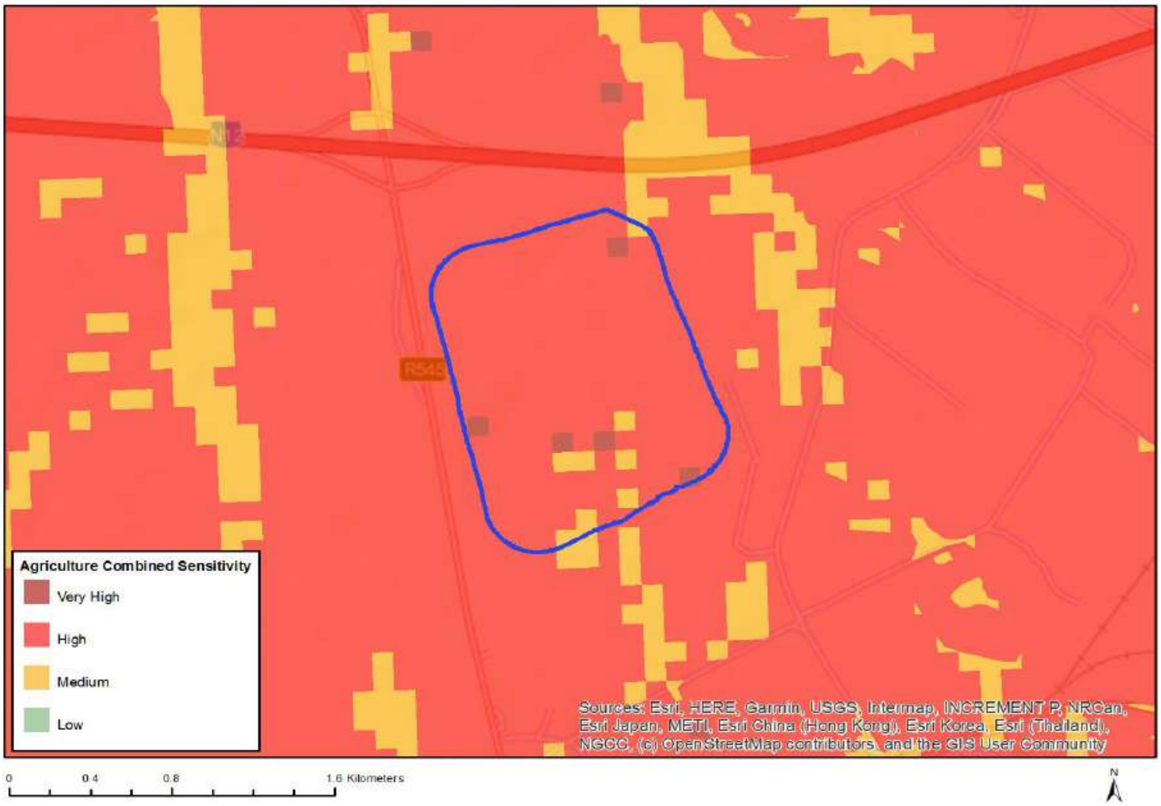
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiver	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf

	sity Impact Assessment	
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
9	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Climate Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
13	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
14	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
15	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
16	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
17	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
18	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

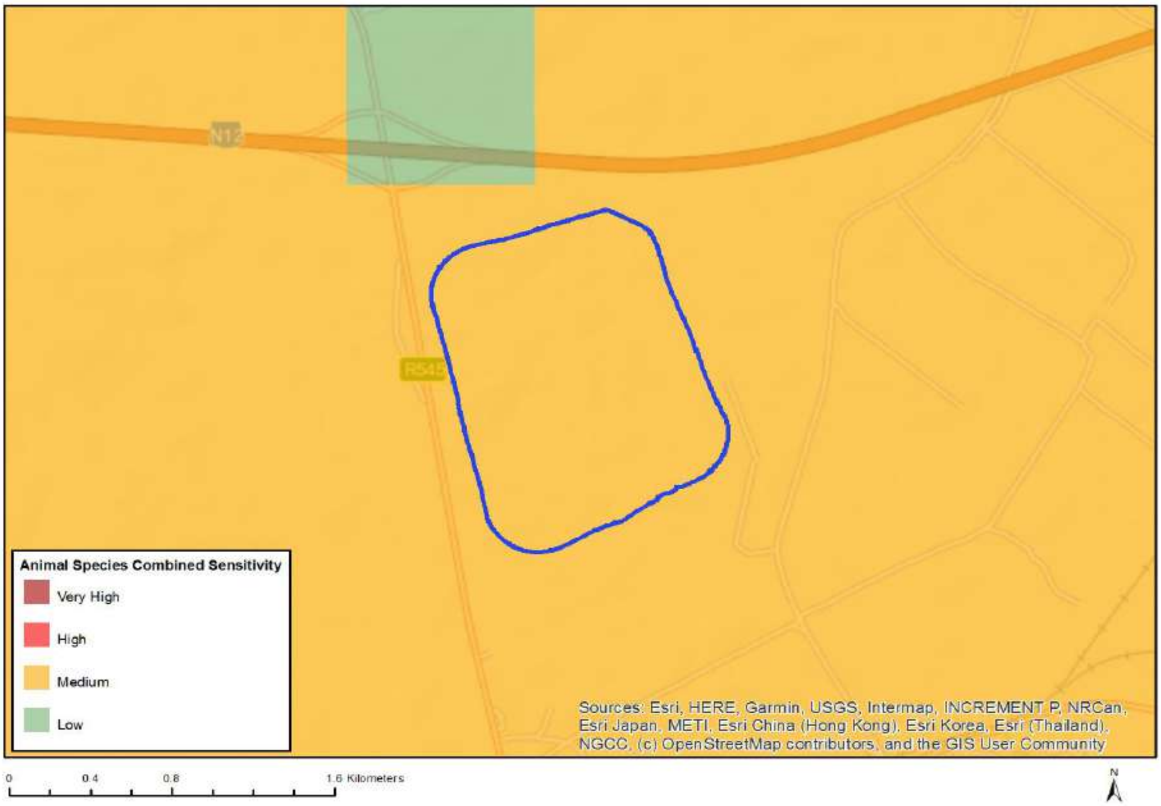


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mammalia-Chrysospalax villosus

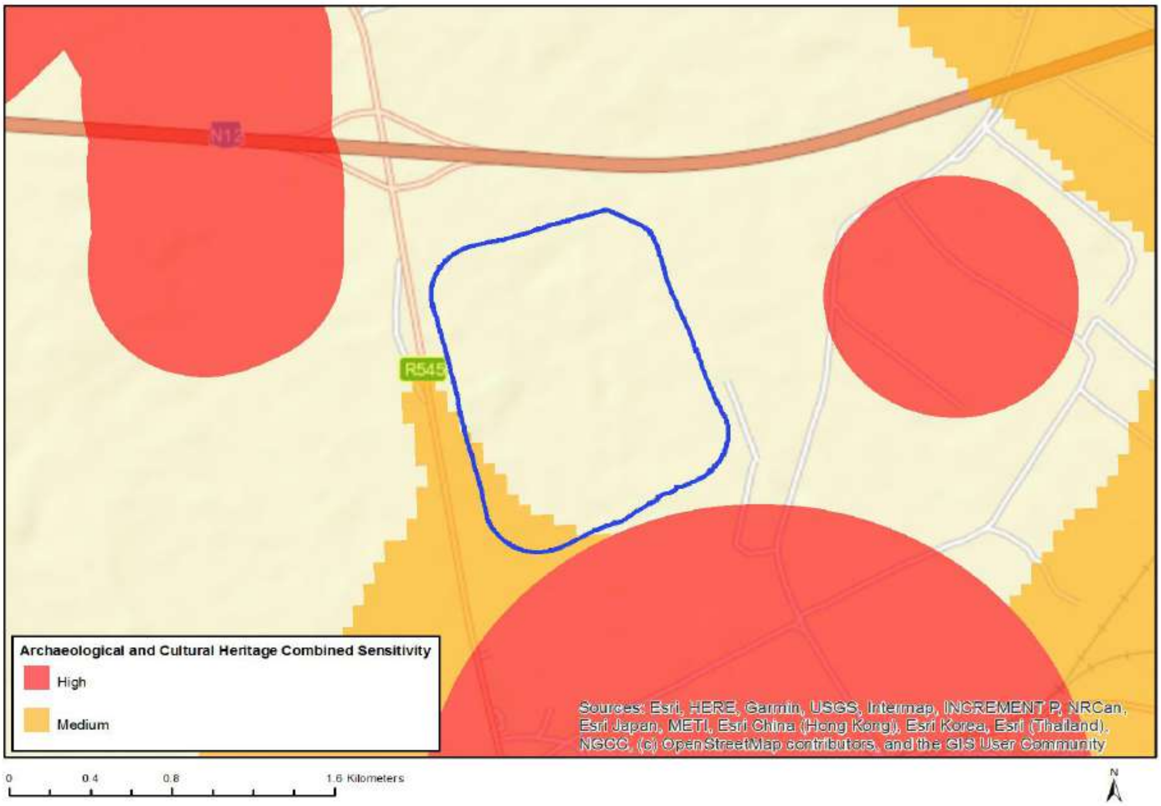
MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mountain or ridge

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

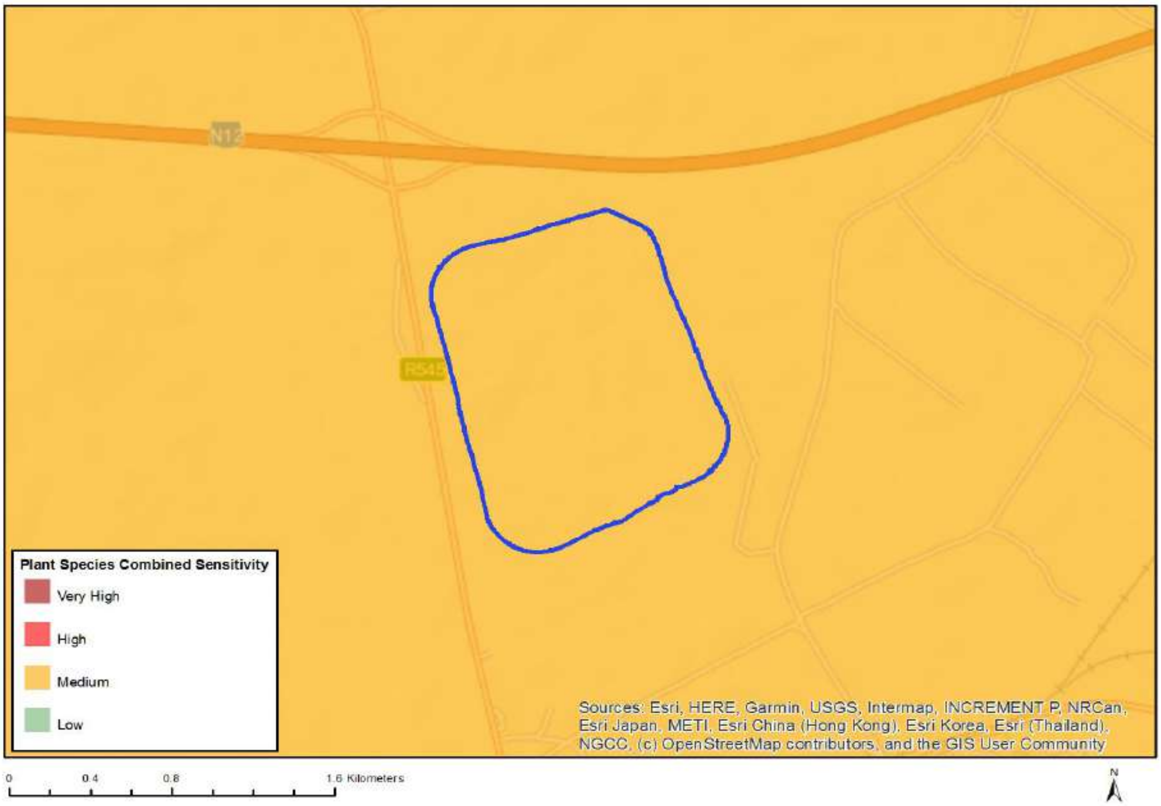
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 411
Medium	Sensitive species 647
Medium	Pachycarpus suaveolens
Medium	Brachycorythis conica subsp. transvaalensis

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Vulnerable ecosystem

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number:

Project name: Zibulo Discard Facility (Potential Overland Conveyor)

Project title: Proposed Zibulo Discard Facility

Date screening report generated: 09/10/2020 16:20:03

Applicant: Anglo American Coal

Compiler: Golder Associate Africa

Compiler signature:

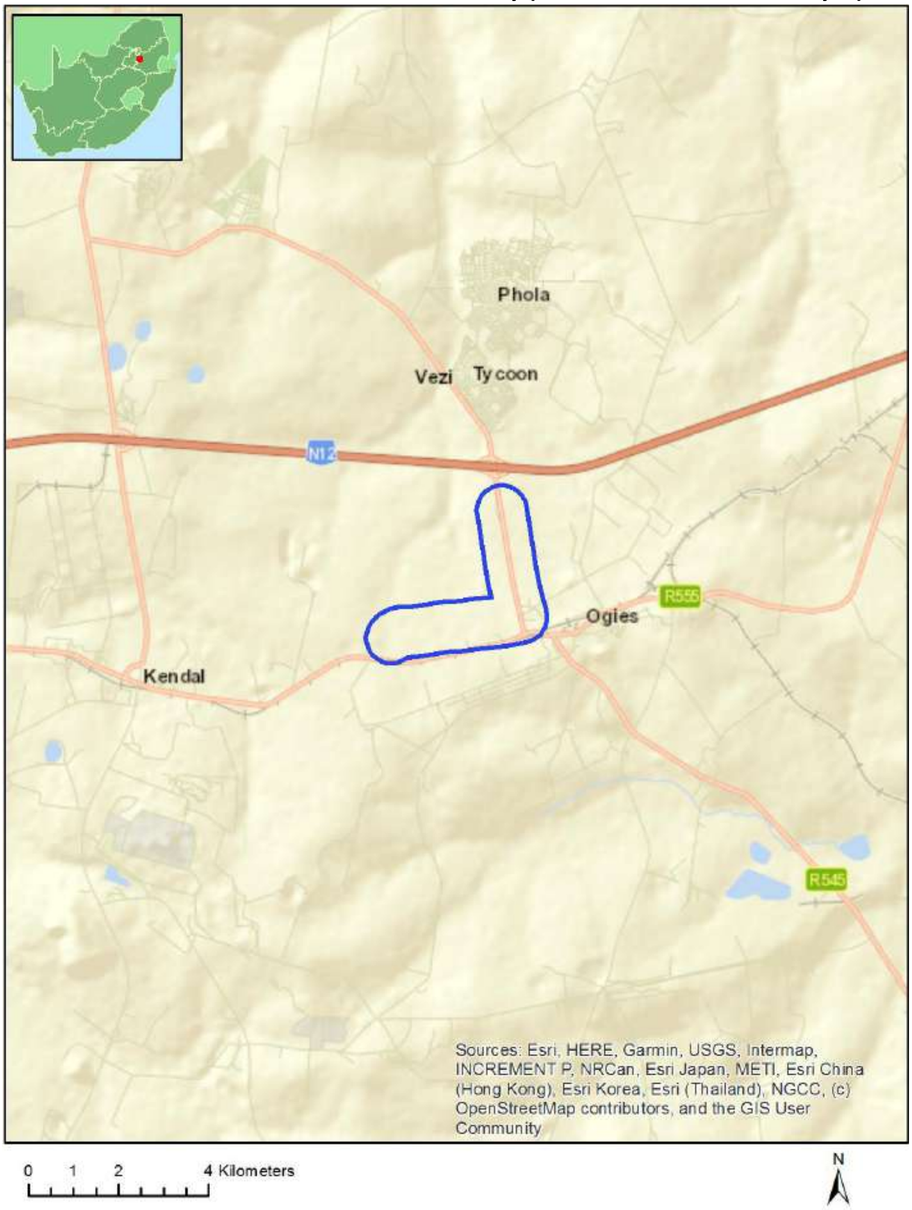
………………………………………………………………………………………………

Table of Contents

Proposed Project Location

Orientation map 1: General location

General Orientation: Zibulo Discard Facility (Potential Overland Conveyor)



Map of proposed site and relevant area(s)

Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	OGIES	122	0	26°3'7.08S	29°2'45.15E	Erven
2	PHOLA PLANT	830	0	26°3'16.39S	29°0'55.75E	Farm
3	KLIPFONTEIN	3	0	26°2'59.32S	29°1'40.7E	Farm
4	SMALDEEL	1	0	26°2'33.68S	29°0'42.68E	Farm
5	OGGIESFONTEIN	4	0	26°1'45.04S	29°3'32.32E	Farm
6	ANGLO	828	0	26°2'4.35S	29°2'34.81E	Farm
7	PRINSHOF	2	0	26°0'12.63S	29°1'54.4E	Farm
8	KLIPFONTEIN	3	32	26°3'19.64S	29°1'44.84E	Farm Portion
9	KLIPFONTEIN	3	13	26°1'54.09S	29°1'25.18E	Farm Portion
10	OGGIESFONTEIN	4	4	26°2'44.71S	29°3'12.71E	Farm Portion
11	KLIPFONTEIN	3	26	26°3'1.82S	29°2'37.79E	Farm Portion
12	KLIPFONTEIN	3	33	26°3'25.53S	29°0'54.48E	Farm Portion
13	KLIPFONTEIN	3	19	26°3'19.29S	29°2'8.11E	Farm Portion
14	KLIPFONTEIN	3	31	26°3'10.22S	29°2'29.51E	Farm Portion
15	KLIPFONTEIN	3	12	26°2'24.46S	29°1'57.52E	Farm Portion
16	SMALDEEL	1	1	26°3'22.44S	29°0'24.71E	Farm Portion
17	KLIPFONTEIN	3	0	26°3'41.81S	29°1'7.46E	Farm Portion
18	OGGIESFONTEIN	4	43	26°3'5.48S	29°3'11.59E	Farm Portion
19	SMALDEEL	1	4	26°2'47.58S	29°0'39.19E	Farm Portion
20	PRINSHOF	2	14	26°1'8.33S	29°2'24.17E	Farm Portion
21	KLIPFONTEIN	3	14	26°3'5.98S	29°1'28.97E	Farm Portion
22	KLIPFONTEIN	3	30	26°3'7.41S	29°2'40.17E	Farm Portion
23	PRINSHOF	2	14	26°0'54.44S	29°2'37.31E	Farm Portion
24	KLIPFONTEIN	3	11	26°3'20.39S	29°2'29.87E	Farm Portion
25	KLIPFONTEIN	3	35	26°3'7.44S	29°2'25.32E	Farm Portion
26	OGGIESFONTEIN	4	63	26°2'15.58S	29°2'17.62E	Farm Portion
27	ANGLO	828	0	26°1'49.73S	29°2'34.08E	Farm Portion
28	PHOLA PLANT	830	0	26°3'16.39S	29°0'55.75E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

Environmental Management Framework	LINK
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46,_67,_78,_80,_92,_103,_122,_129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: Mining|Mining Right|Mining - Mining Right.

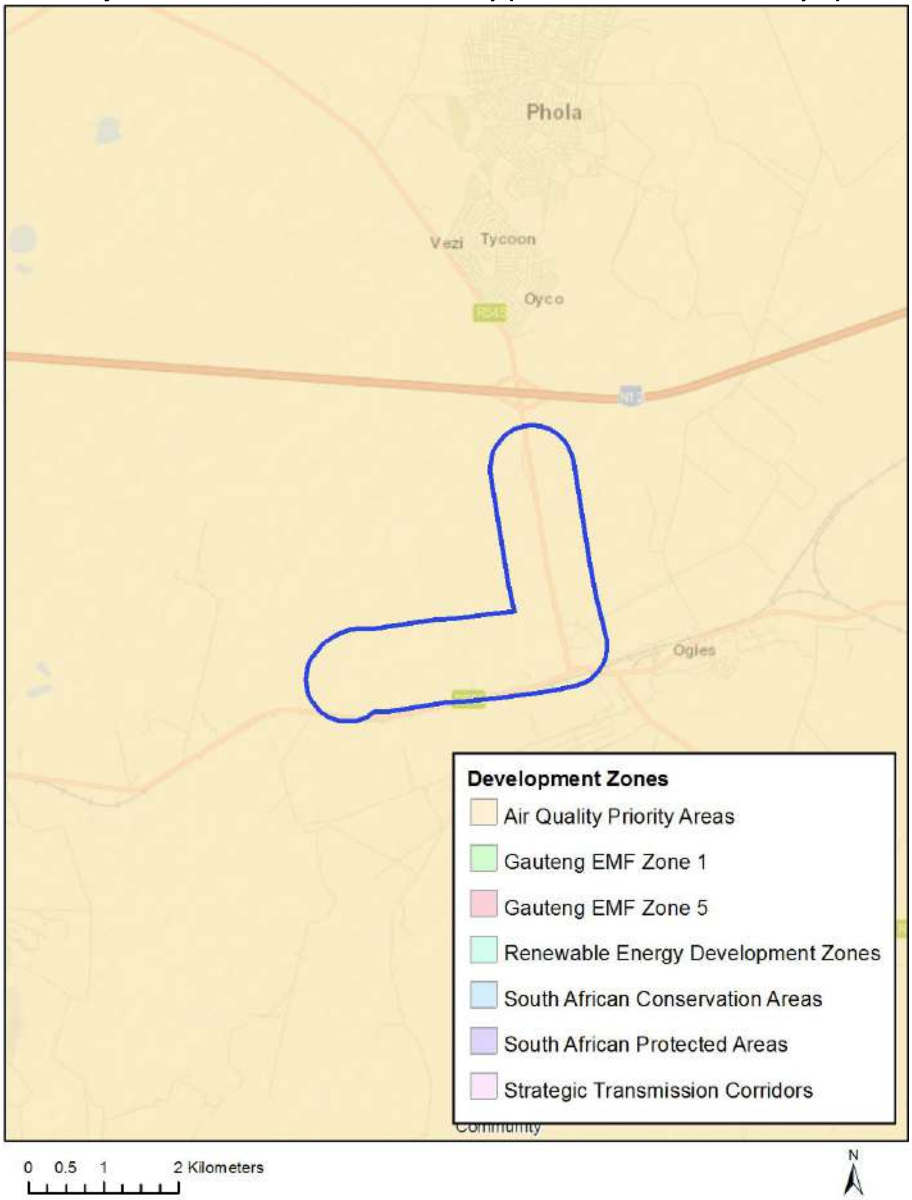
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-International corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Zibulo Discard Facility (Potential Overland Conveyor)



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme				X
Defence Theme				X
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

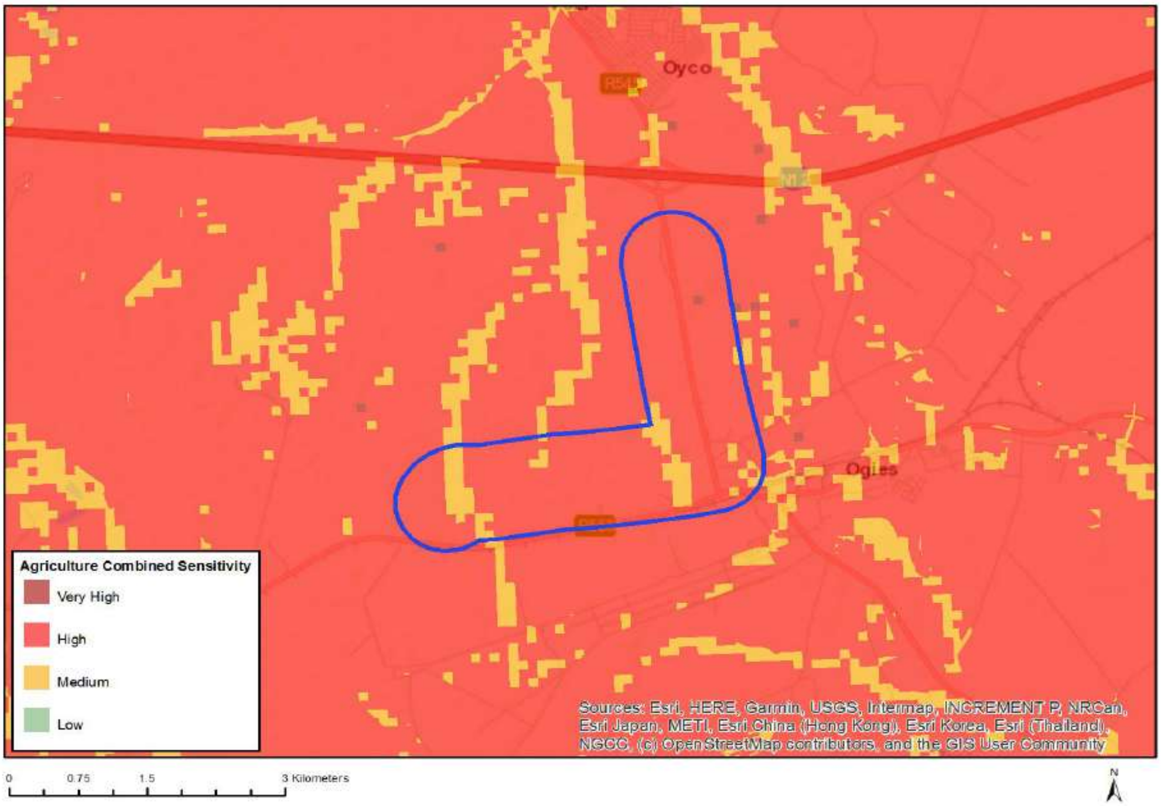
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology Assessm	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

	ent	
8	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
9	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Climate Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
13	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
14	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
15	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
16	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
17	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
18	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

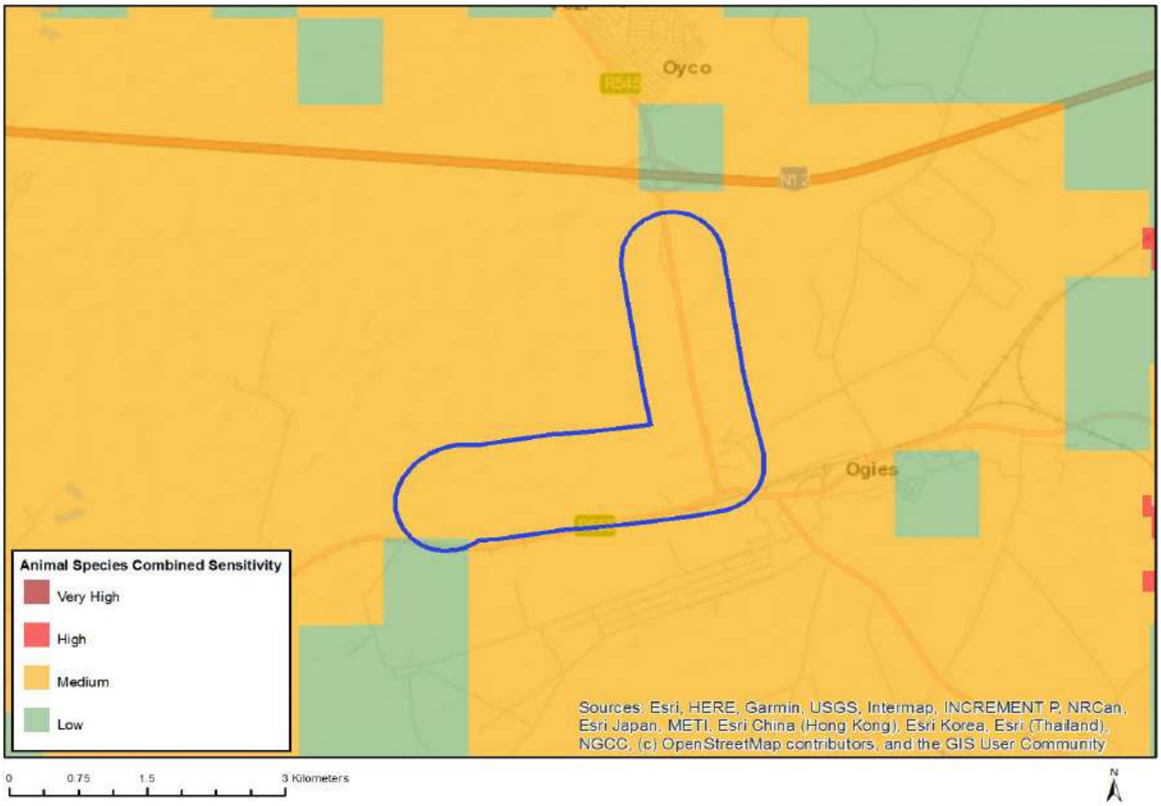


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

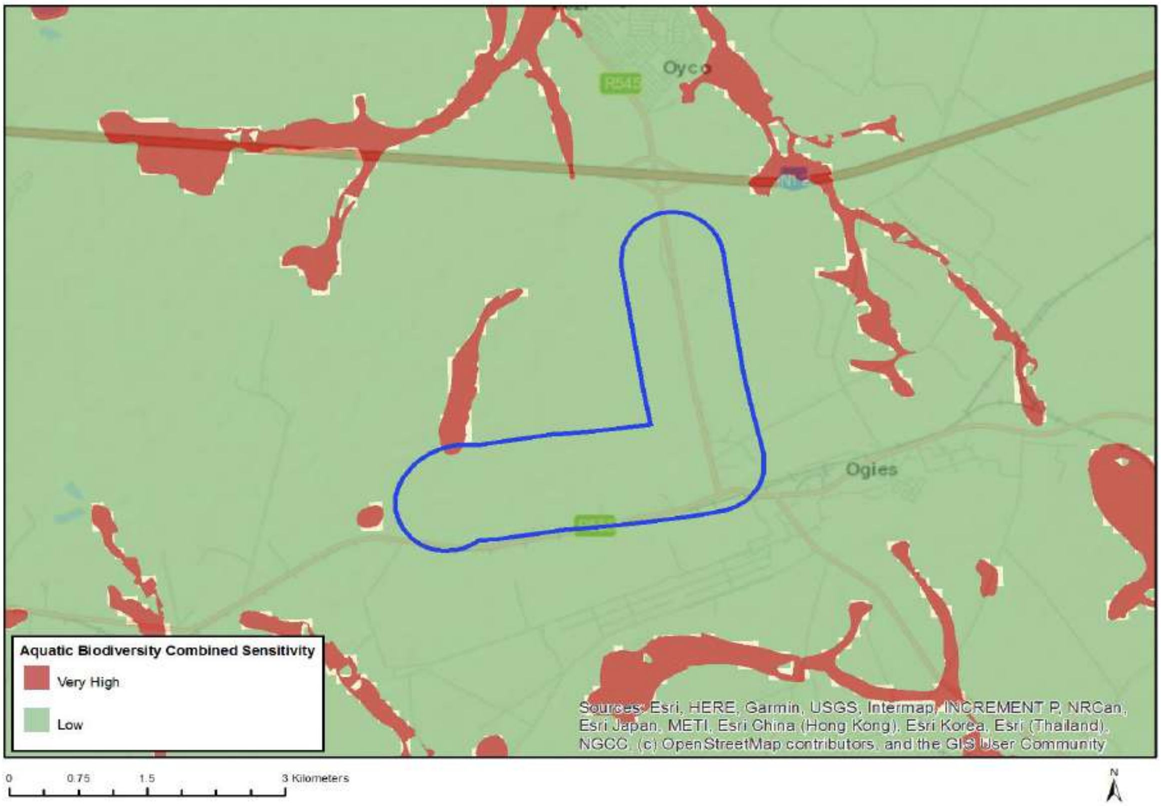


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Ourebia ourebi ourebi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

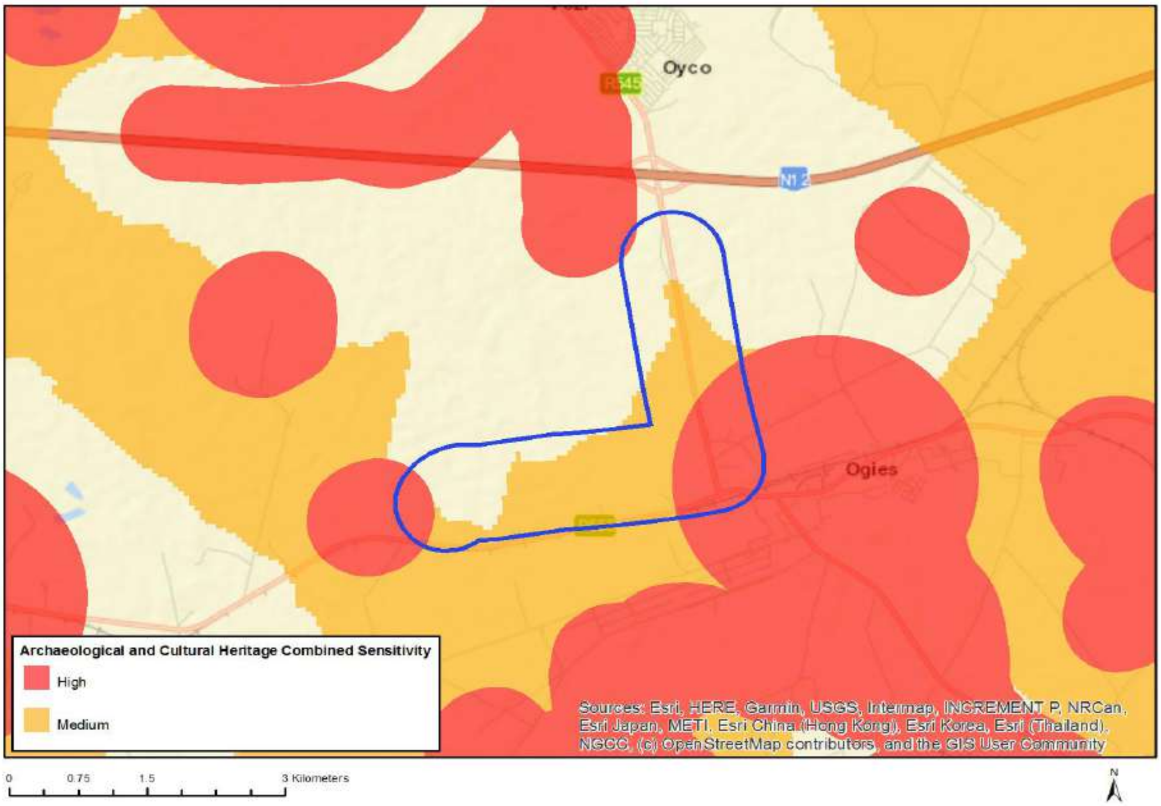


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands and Estuaries

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of an important wetland
High	Within 500 m of a heritage site
Medium	Mountain or ridge

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

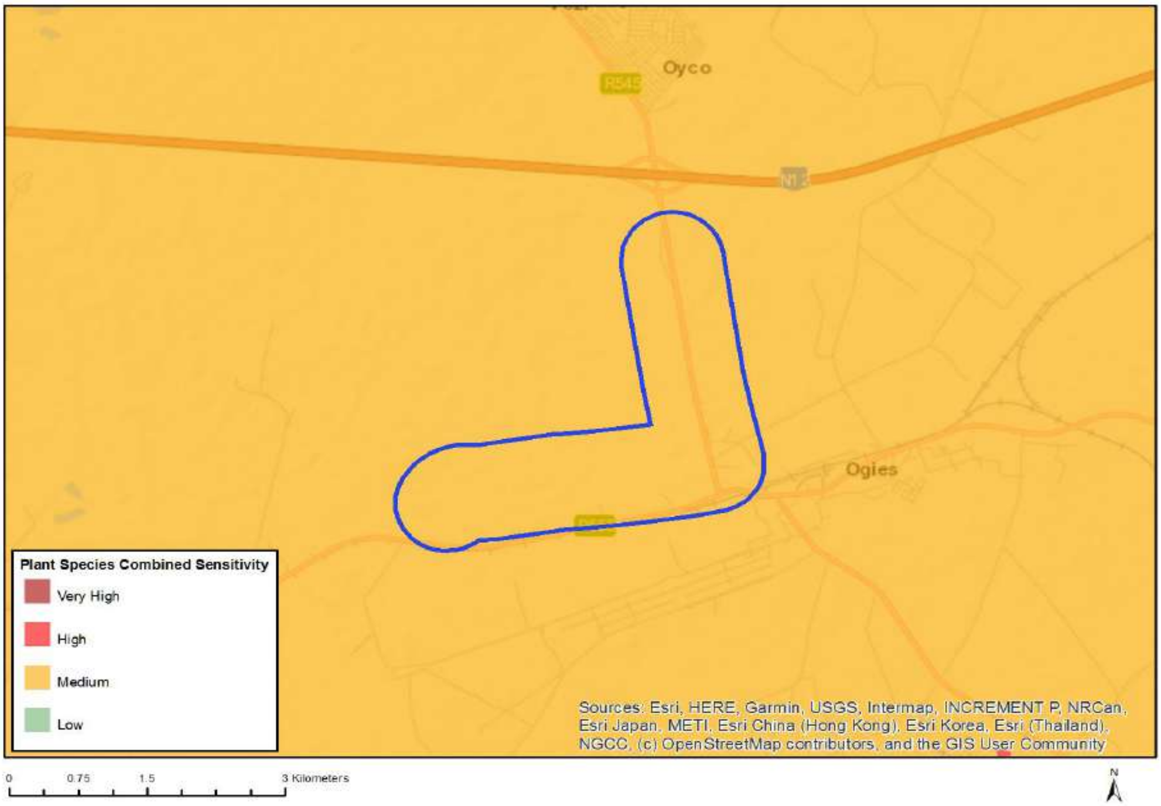
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

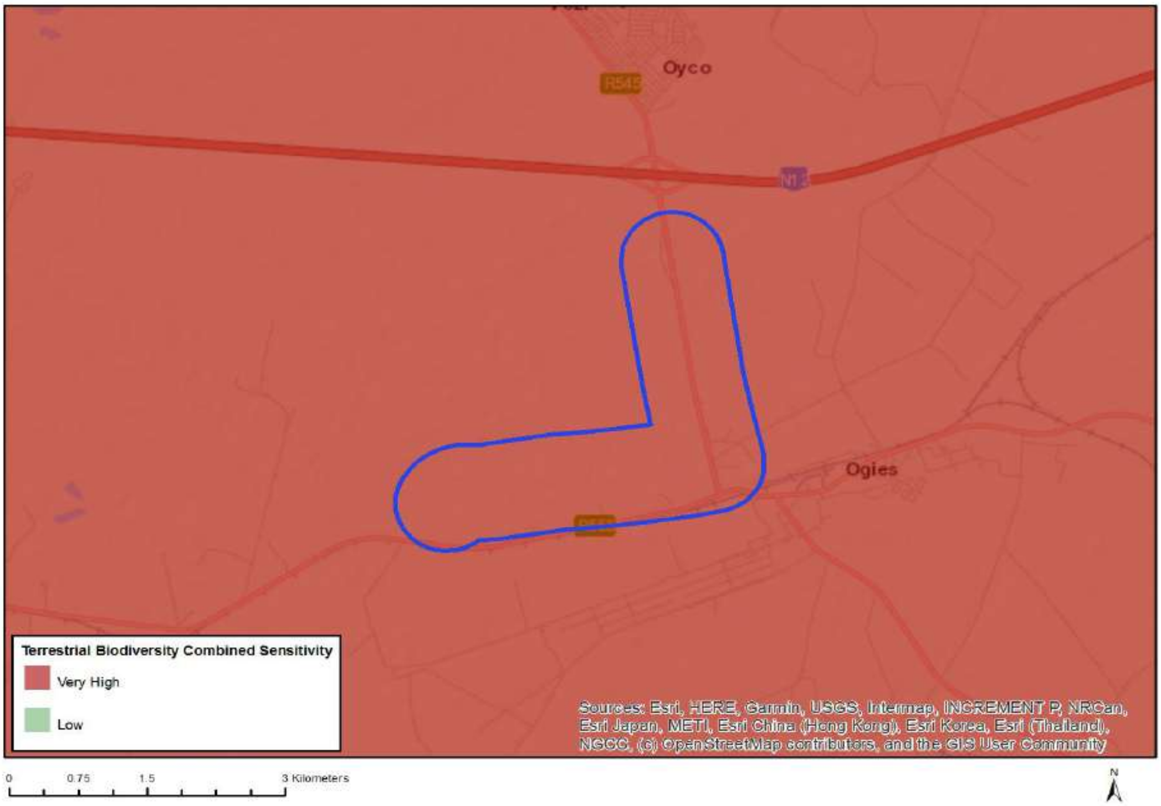


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 411
Medium	Sensitive species 647
Medium	Pachycarpus suaveolens
Medium	Brachycorythis conica subsp. transvaalensis

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Vulnerable ecosystem